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U. S. DEPARTMENT OF AGRICULTURE,
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SNOW AND ICE BULLETIN.

Note.—This bulletin is issued on Tuesdays during the winter. It is based upon data from regular Weather Bureau and selected cooperative stations.

Unusual portions represent area covered with snow; lines indicate depth in inches. No attempt is made to delineate areas and depths that may exist at high altitudes in the Rocky Mountains beyond those shown by reports from regular Weather Bureau stations.

As far as practicable all reports of snow and ice are printed in the table.

WASHINGTON, D. C., *December 5, 1916.*

DEPTH OF SNOW.

GENERAL REVIEW OF SNOW CONDITIONS FOR OCTOBER AND NOVEMBER OF THE PRESENT YEAR.

During October an unusually large extent of the country to westward of the Appalachian Mountains, was visited by snow-storms of more or less extent, the southern limit of snow reaching well into the central portions from the Ohio Valley westward to the mountains of California. Over the eastern districts, however, there was very little snow during the month.

From October 18 to 20 unusually heavy snows for so early in the season occurred over portions of the upper Mississippi and lower Missouri valleys, the depth exceeding 10 inches in some localities.

In the western mountain districts snow was reported at some time during the month from nearly all districts, and over large areas from Montana southward over Wyoming, Colorado, Utah, and Nevada, the falls were unusually large for October. The warm weather during the latter part of the month caused the snow cover to disappear rapidly, and at the close little remained on the ground, except in the higher mountains.

During November snowfall was much less widely distributed than in the preceding month, and east of the Rocky Mountains the amounts were generally small, except in the northern portions of New England and New York, and over the upper peninsula of Michigan, where the fall during the month ranged from 6 to 10 inches or more.

The principal periods with snow during the month were the 11th to 14th, when light falls prevailed from the northern Rocky Mountain region eastward to the Great Lakes and New England, and from the 22d to 24th, when a storm moving from the southern Plains States to the Great Lakes and the St. Lawrence Valley gave light snows over considerable areas from the upper Mississippi Valley eastward. Severe cold weather following the snow period of the 11th to 14th, caused some injury to fall-sown grains to the southward of the snow covered area, but the slight cover over the northern portion of the winter grain area afforded much needed protection from the cold.

To the westward of the mountains there appears to have been but little snow, except in some of the higher elevations of Idaho, where heavy falls are reported. Practically no snow remained on the ground at the close of the month, except at a few points in the Lake Superior region and on the higher elevations in the mountains of the West.

From December 1 to 4, inclusive, light snows were reported from a few points in the northern portions of New York and New England, and in the mountain districts of the far Northwest, but elsewhere no snow was reported. As a consequence winter began with the ground nearly everywhere free of snow, except in some of the mountain districts of the West, and very generally unfrozen. Fall sown wheat throughout most of the northern districts is reported in good condition to enter the winter, but over the southern districts dry weather early in the fall hindered planting, germination and growth, and the crop is less promising.

Stock is reported very generally in good condition to enter the winter, and feed on the ranges has been available in practically all districts, due to the lack of any continued snow cover.

The absence of snow or other unfavorable weather permitted rapid progress in gathering corn, and that crop has been very generally safely housed in excellent condition.

ICE IN RIVERS AND HARBORS.

The continued warmth has prevented the formation of ice to any extent, and practically all rivers and harbors continue open.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., DECEMBER 4, 1916.

Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors, etc.
California.	*Inches*	*Inches*	*Maine.*	*Inches*	*Inches*	*New Hampshire.*	*Inches*	*Inches*
Inskip	11	.....	Gardiner	1	†	Bethlehem	1	.....
Summit	22	.....	Lewiston	T.	†	*New York.*		
Table Rock	20	.....	Redington	2	.....	Lake Placid	3	.....
Yosemite	T.	.....	*Michigan.*			Saranac Lake	2	.....
Colorado.			Calumet	2	.....	*North Dakota.*		
Cumbres	1	.....	Iron River	T.	.....	Bismarck	0	6.0
Leadville	3	.....	Ironwood	T.	.....	Williston	0	*
Marshall Pass	4	.....	Newberry	T.	.....	*Vermont.*		
Steamboat Springs	7	.....	*Minnesota.*			Northfield	1	.....
Idaho.			Duluth	0	†	*Wisconsin.*		
Elk Creek	22	.....	Moorhead	0	*	Rhinelander	T.	.....
McCall	21	.....	Winton	1	.....	Wausau	0	†
Hailey	18	.....	*Montana.*			*Wyoming.*		
Mackay	2	.....	Helena	T.	.....	Cheyenne	T.	.....
Spencer	8	.....	Kalispell	T.	.....	Yellowstone Park	4	.....
Driggs	9	.....						

*Shore ice. †Floating ice. T. indicates trace.

No. 2. Winter 1916-17.

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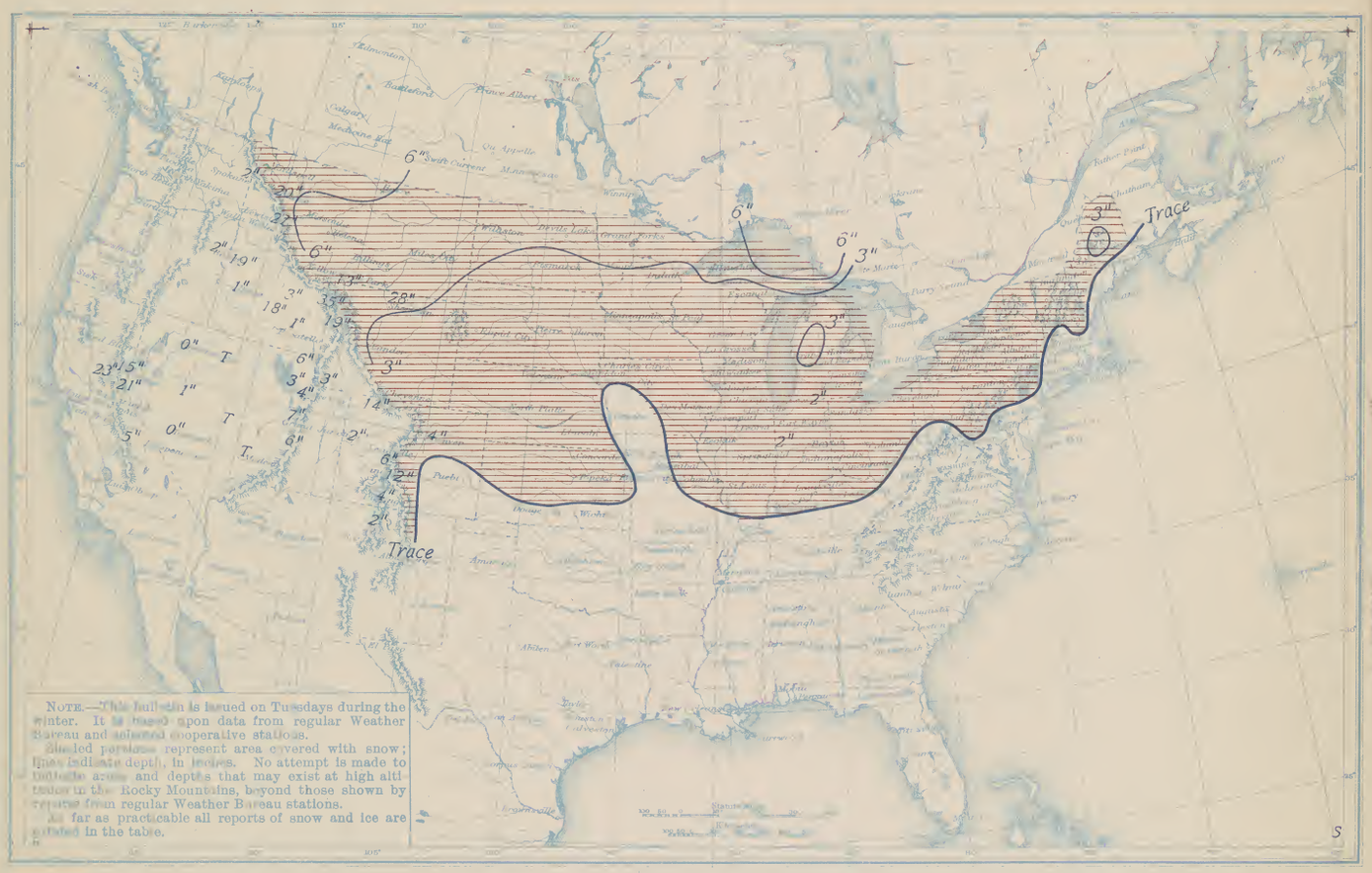
SNOW AND ICE BULLETIN.



DEPTH OF SNOW.

The week ending 8 p. m. Monday, December 11, had more or less precipitation over considerable areas from the Great Lakes westward, and over nearly all portions to eastward of the Mississippi River.

Some snow occurred in the western mountain districts early in the week in connection with a low-pressure area that moved eastward from the Pacific coast. This storm developed considerable intensity in the upper Mississippi Valley by Thursday, and more or less snow occurred over northern districts to westward of the upper Lakes. During the latter part of the week this storm moved to the Atlantic coast with very general rains over all central and southern districts to eastward of the Mississippi, while substantial snows occurred in the upper Lake region.

Another area of rain and snow appeared over Colorado Saturday, and moving eastward reached the middle Mississippi and lower Ohio Valleys by Monday morning, attended by light rain or snow over much of the West and Northwest. At this writing the storm referred to above has moved eastward to the Atlantic coast and rains or snow, mostly light, are prevailing over a wide area from the northern Rocky Mountain region eastward and southeastward to the Atlantic coast.

At 8 p. m. Monday small amounts of snow were reported from nearly all central and northern districts of the country, and the general snow since that time has probably added several inches to the amounts over most districts from the Lake region and Ohio Valley eastward.

In the upper Lake region the snow cover increased considerably during the week, and depths of from 1 to 6 inches are now reported over North Dakota and Montana.

In the mountain regions of the West considerable snow has accumulated in the high ranges, but at the lower elevations the ground remains only lightly covered or bare.

ICE IN RIVERS AND HARBORS.

In the absence of decided cold but little ice formed during the past week, and most of the river and lake ports remain open. The upper Missouri and some of its tributaries are now ice bound, and floating ice is reported as far south as St. Joseph, Mo. In the Mississippi some ice has formed from La Crosse northward, but elsewhere and in the remaining streams of the country practically no ice has yet formed.

In the Lake region small amounts of ice are reported from Lake Superior, but the harbors in the remaining lakes continue open, and there has been but little interruption to navigation so far at any point.

The following special report has been received:

Duluth, Minn., December 11, 1916.—St. Louis Bay is covered with ice, except that some channels are open. Superior Bay is covered solid from the interstate bridge to some distance eastward, but in the western portion there is little ice, except in some elevator and coal dock slips. Navigation has not been seriously impeded.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., DECEMBER 11, 1916.

Stations.	Snow.	Ice in rivers, harbors, etc.
California.	*Inches*	*Inches*
Huntington Lake	5	.....
Portola	15	.....
Summit	21	.....
Table Rock	23	.....
Colorado.		
Crested Butte	6	.....
Cumbres	4	.....
Denver	4	.....
Grand Junction	2	.....
Marshall Pass	12	.....
Rico	T.	.....
Steamboat Springs	14	.....
Idaho.		
Boise	1	.....
Elk Creek	35	.....
Hailey	18	.....
Mackay	3	.....
McCall	27	.....
Pocatello	1	0.0
Spencer	19	.....
Illinois.		
Camp Point	T.	.....
Chicago	1	.....
McLeansboro	T.	.....
Montrose	1	.....
New Burnside	T.	.....
Oregon	T.	.....
Peoria	T.	0.0
Pontiac	T.	.....
Springfield	T.	.....
Urbana	T.	.....
Walnut	T.	.....
Indiana.		
Bloomington	1	.....
Evansville	T.	0.0
Fort Wayne	T.	.....
Indianapolis	T.	.....
La Fayette	2	.....
Marion	T.	.....
Paoli	T.	.....
Richmond	T.	.....
Terre Haute	T.	0.0
Valparaiso	1	.....
Winona Lake	2	.....
Iowa.		
Charles City	T.	.....
Des Moines	0	*
Dubuque	T.	0.0
Keokuk	T.	0.0
Sioux City	0	†
Kansas.		
Concordia	1	.....
Dodge City	T.	0.0
Ellinwood	T.	.....
Garden City	1	.....
Iola	1	0.0
Manhattan	1	.....
Marion	1	.....
Topeka	T.	.....
Kentucky.		
Beattyville	T.	.....
Mount Sterling	T.	.....
Maine.		
Bangor	T.	0.0
Greenville	5	0.0
Lewiston	0	†.
Redington	T.	.....
Van Buren	T.	.....
Maryland.		
Frederick	T.	.....
Massachusetts.		
Boston	T.	.....
Fitchburg	1	.....
Michigan.	*Inches*	*Inches*
Alpena	1	0.0
Big Rapids	2	.....
Cadillac	4	.....
Calumet	6	.....
Detroit	T.	0.0
Escanaba	2	0.0
Grand Haven	3	.....
Grand Rapids	2	.....
Houghton	4	0.5
Iron Mountain	2	.....
Iron River	T.	.....
Ironwood	5	.....
Lansing	1	.....
Ludington	2	0.0
Mackinaw	2	.....
Manistee	1	.....
Marquette	9	0.0
Newberry	6	.....
Port Huron	1	0.0
Saginaw	1	*
St. Ignace	4	.....
Sault Ste. Marie	5	0.0
Minnesota.		
Duluth	1	7.0
Leech Lake Dam	T.	.....
Mankato	T.	.....
Minneapolis	1	.....
Moorhead	3	*
St. Paul	1	*†
Thief River Falls	6	.....
Winton	3	.....
Missouri.		
Clinton	2	.....
Columbia	1	.....
Hannibal	T.	0.0
Ironton	T.	.....
Maryville	T.	.....
Rolla	T.	.....
St. Joseph	0	†
St. Louis	T.	0.0
Unionville	1	.....
Montana.		
Billings	2	.....
Bozeman	3	.....
Butte	2	.....
Havre	6	.....
Findon	5	.....
Glacier Park	7	.....
Glasgow	2	.....
Helena	3	.....
Kalispell	6	.....
Miles City	4	.....
Red Lodge	3	.....
Nebraska.		
Columbus	T.	.....
Guide Rock	T.	.....
Imperial	3	.....
McCook	1	.....
North Platte	T.	0.0
Omaha	0	†
Ravenna	2	.....
Valentine	T.	.....
Nevada.		
Austin	1	.....
Elko	T.	.....
McGill	T.	.....
New Hampshire.		
Bethlehem	T.	.....
New Jersey.		
Plainfield	T.	.....
New Mexico.		
Chama	2	.....
Des Moines	2	.....
Santa Fe	2	.....
New York.	*Inches*	*Inches*
Albany	T.	.....
Buffalo	T.	0.0
Cazenovia	1	.....
De Ruyter	T.	.....
Herkimer	T.	.....
Perrysburg	1	.....
Poughkeepsie	1	.....
Syracuse	T.	0.0
North Dakota.		
Bismarck	1	7.0
Devils Lake	3	.....
Williston	4	7.5
Ohio.		
Ashland	T.	.....
Cambridge	T.	.....
Canton	T.	.....
Marion	T.	.....
Millersburg	T.	.....
Sandusky	T.	0.0
Toledo	T.	0.0
Warren	T.	.....
Washington	T.	.....
Wauseon	1	.....
Waverly	T.	.....
Wapaponeta	T.	.....
Oregon.		
Baker	2	.....
Pennsylvania.		
Reading	T.	.....
Warren	T.	.....
South Dakota.		
Huron	T.	6.0
Pierre	T.	*
Rapid City	T.	0.0
Yankton	T.	†
Texas.		
Amarillo	T.	.....
Utah.		
Heber	4	.....
Kelton	T.	.....
Logan	6	.....
Modena	T.	.....
Richfield	T.	.....
Salt Lake City	3	.....
Thistle	7	.....
Vermont.		
Northfield	T.	.....
Washington.		
Spokane	2	.....
Walla Walla	T.	.....
Wisconsin.		
Ashland	3	.....
Eau Claire	1	.....
Fond du Lac	T.	.....
Grand Rapids	1	.....
Green Bay	2	1.0
La Crosse	T.	†
Madison	T.	.....
Medford	T.	.....
Milwaukee	1	0.0
Park Falls	T.	.....
Wausau	T.	*
Wyoming.		
Alta	19	.....
Cheyenne	1	.....
Casper	2	.....
Dome Lake	28	.....
Evanston	3	.....
Lander	1	.....
Sheridan	5	.....
Wyncote	T.	.....
Yellowstone Park	13	.....

*Shore ice. † Floating ice. T. indicates trace.

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No. 4. Winter 1916-17.

U. S. DEPARTMENT OF AGRICULTURE,
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SNOW AND ICE BULLETIN.

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Shaded portions represent areas covered with snow; lines indicate depth, in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond those shown by reports from regular Weather Bureau stations.

As far as practicable all reports of snow and ice are printed in the table.

WASHINGTON, D. C., *December 26, 1916.*

GENERAL REVIEW OF THE WEATHER DURING THE WEEK.

The storm central over the North Carolina coast at 8 p. m. Monday the 18th passed northeastward beyond the coast by Tuesday morning, and but little snow occurred from New York northward. At that time, however, a low-pressure area had moved to Lake Michigan and pressure was low over the central Rocky Mountain region, resulting in very general but light snows over most northern districts from the upper Lakes westward to and including the northern mountains.

The western depression moved to the lower Mississippi Valley by Wednesday morning, and light snow or rain was widely distributed from the Appalachians westward to the Rocky Mountains.

By Thursday morning the area of precipitation had extended to the Atlantic coast and during Friday and Saturday the depression moved from the vicinity of Chesapeake Bay to the Canadian Maritime Provinces as a storm of considerable severity, attended by general rains or snows over practically all districts from the Mississippi River eastward to the Atlantic coast. Near the Middle Atlantic and New England coasts the rain was heavy and carried off much of the local snow covering. During this period some snow fell in the mountain districts of the West, and by Saturday a storm of considerable extent had developed over the north Pacific coast and pressure was low also in the central Rocky Mountain region. These disturbances moved eastward and precipitation resulted over much of the West, with heavy rains in southern California and substantial snows in the Plateau and Rocky Mountain regions and over the northern districts as far eastward as the Great Lakes.

At 8 p. m. Monday the far western storm had moved to Colorado, and rains or snows continued west of the Rocky Mountains, and snows had extended into the central Plains States and to the northward.

At this writing the western storm has advanced into the lower Missouri Valley and snow or rain now prevails over large areas in the Mississippi and Missouri Valleys, and over the Southern States, with prospects of a farther extension eastward.

DEPTH OF SNOW.

Over the Mountain and Plateau regions of the West there was a very considerable increase in the snow depth over that reported last week, especially in portions of Arizona, Utah, Idaho, and Wyoming. Over the northern districts there was likewise a very general increase as far eastward as central New England. Along the immediate Atlantic coast and westward to the Appalachians and to the southward of the Ohio River a considerable portion of the covering of last week disappeared under the influence of heavy rains and warmer weather, the greatest reduction in depth occurring in New England.

There is now a substantial snow covering over all northern districts, including the northern portions of the winter wheat belt. In the western mountains there has been considerable snowfall during the week, and the lower levels are now well covered from the central portions of Arizona and New Mexico to the Canadian boundary. In the higher ranges the increases have been general, but apparently not so great as at some of the lower levels.

ICE IN RIVERS AND HARBORS.

The severe cold wave over the Northwest at the beginning of the week overspread most of the country to eastward of the Rocky Mountains during the week, and considerable increases in the ice thickness occurred in nearly all northern streams and lakes. In the upper and middle Missouri and its tributaries the increases ranged from 3 to 14 inches, and in the upper Mississippi from 2 to 6 inches. In the Great Lakes additional ice formed in all the harbors and late shipping had some difficulty in reaching port. The Ohio continues open throughout, and some ice disappeared from the streams of the Middle Atlantic States, due to the heavy rains and warmer weather of the latter part of the week. On the Hudson and the rivers of New England small increases were noted over the amounts reported last week.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., DECEMBER 25, 1916.

Stations.	Snow.	Ice in rivers, harbors, etc.
Arizona.	*Inches*	*Inches*
Flagstaff	12	.....
Arkansas.		
Little Rock	T.	.....
Colorado.		
Grand Junction	T.	.....
Connecticut.		
Hartford	T.	†
New Haven	T.	.....
Dist. of Columbia.		
Washington	.....	*
Idaho.		
Boise	2	.....
Lewiston	3	.....
Pocatello	16	.....
Illinois.		
Cairo	.....	†
Camp Point	T.	.....
Chicago	4	.....
New Burnside	1	.....
Oregon	4	.....
Springfield	T.	.....
Indiana.		
Bloomington	3	.....
Evansville	T.	†
Fort Wayne	3	.....
Indianapolis	4	.....
Marion	5	.....
Richmond	2	.....
Terre Haute	T.	*
Valparaiso	8	.....
Iowa.		
Albia	3	.....
Atlantic	2	.....
Charles City	4	.....
Davenport	4	5.5
Des Moines	3	8.0
Dubuque	4	9.0
Keokuk	1	8.0
New Hampton	3	.....
Sioux City	6	6.0
Kansas.		
Concordia	T.	.....
Lakin	.....	6.5
Smith Center	T.	.....
Kentucky.		
Bowling Green	1	.....
Greensburg	2	.....
Lexington	1	.....
Louisville	T.	†
Mount Sterling	2	.....
Owensboro	T.	.....
Maine.		
Bangor	10	.....
Cornish	20	.....
Eastport	9	.....
Gardiner	10	.....
Greenville	19	13.0
Portland	7	.....
Van Buren	14	.....
Maryland.		
Easton	T.	.....
Frederick	2	.....
Massachusetts.		
Boston	2	.....
Fitchburg	6	.....
Michigan.		
Alpena	8	6.0
Calumet	22	.....
Chatham	12	.....
Detroit	2	7.0
Escanaba	4	11.5
Grand Haven	8	.....
Grand Rapids	8	.....
Houghton	15	8.0
Lansing	5	.....
Ludington	12	.....
Michigan—Contd.	*Inches*	*Inches*
Marquette	12	3.0
Saginaw	7	4.0
Sault Ste. Marie	11	*
Minnesota.		
Duluth	2	16.0
Hinckley	2	.....
Leech Lake Dam	2	.....
Mankato	5	.....
Minneapolis	6	.....
Montevideo	4	.....
Moorhead	6	19.0
Roseau	6	.....
St. Paul	5	7.0
Thief River Falls	8	.....
Wheaton	2	.....
Missouri.		
Hannibal	.....	†‡
Ironton	1	.....
Kansas City	.....	†
Poplar Bluff	T.	.....
Rolla	T.	.....
St. Joseph	.....	‡
St. Louis	.....	†
Unionville	3	.....
Montana.		
Billings	2	.....
Bozeman	11	.....
Butte	11	.....
Findon	17	.....
Glacier Park	14	.....
Haugan	25	.....
Helena	4	.....
Kalispell	11	.....
Miles City	12	.....
Virginia City	7	.....
Nebraska.		
Alliance	T.	.....
Auburn	1	.....
Guide Rock	4	.....
North Platte	1	.....
Omaha	3	16.5
O'Neill	4	.....
Ravenna	3	.....
Tekamah	4	.....
Valentine	2	.....
Nevada.		
Tonopah	3	.....
Winnemucca	2	.....
New Hampshire.		
Bethlehem	13	.....
Concord	7	4.0
Durham	4	.....
Hanover	3	.....
New Jersey.		
Lakewood	T.	.....
Plainfield	2	.....
Sandy Hook	T.	.....
Trenton	T.	3.0
New Mexico.		
Chama	12	.....
Perea	3	.....
Raton	T.	.....
Santa Fe	4	.....
Taos	T.	.....
New York.		
Addison	3	.....
Albany	T.	3.0
Angelica	11	.....
Binghamton	3	.....
Buffalo	14	3.0
Canton	15	.....
Cazenovia	9	.....
Cooperstown	8	.....
De Ruyter	5	.....
Ithaca	3	.....
Lowville	8	.....
New York—Contd.	*Inches*	*Inches*
Ogdensburg	15	.....
Rochester	10	6.5
Syracuse	4	.....
Warwick	6	.....
Watertown	8	.....
North Dakota.		
Bismarck	11	2.0
Devils Lake	3	.....
Williston	8	15.5
Ohio.		
Canton	10	.....
Cincinnati	T.	.....
Cleveland	3	3.0
Columbus	5	.....
Dayton	2	3.5
Marion	8	.....
Millersburg	9	.....
Sandusky	4	8.0
Tiffin	8	.....
Toledo	6	3.5
Waverly	2	.....
Washington	1	.....
Oregon.		
Baker	5	.....
Pennsylvania.		
Drifton	2	.....
Erie	8	2.5
Harrisburg	1	6.0
Mifflintown	2	.....
Pittsburgh	.....	†
Reading	1	.....
Stroudsburg	4	.....
Rhode Island.		
Narragansett Pier	T.	.....
Providence	T.	.....
South Dakota.		
Pierre	4	14.0
Rapid City	3	.....
Yankton	4	11.5
Utah.		
Modena	10	.....
Salt Lake City	14	.....
Vermont.		
Brattleboro	4	.....
Burlington	10	.....
Northfield	10	.....
St. Johnsbury	6	.....
Virginia.		
Woodstock	1	.....
Washington.		
Cascade Tunnel	65	.....
Laurier	15	.....
Spokane	11	.....
Walla Walla	4	.....
West Virginia.		
Parkersburg	T.	†
Wisconsin.		
Brodhead	6	.....
Delavan	6	.....
Green Bay	6	8.5
La Crosse	7	8.0
Madison	7	.....
Milwaukee	3	.....
Wausau	5	6.0
Wyoming.		
Buffalo	9	.....
Casper	1	.....
Cheyenne	1	.....
Dome Lake	32	.....
Evanston	7	.....
Fox Park	28	.....
Lander	6	.....
Sheridan	6	.....
South Pass City	11	.....
Wyncote	2	.....
Yellowstone Park	28	.....

*Shore ice. † Floating ice. ‡ Ice gorged. § Measurement impracticable. T. indicates trace.

No. 5. Winter 1916-17.

U. S. DEPARTMENT OF AGRICULTURE,
WEATHER BUREAU.
CHARLES F. MARVIN, CHIEF.

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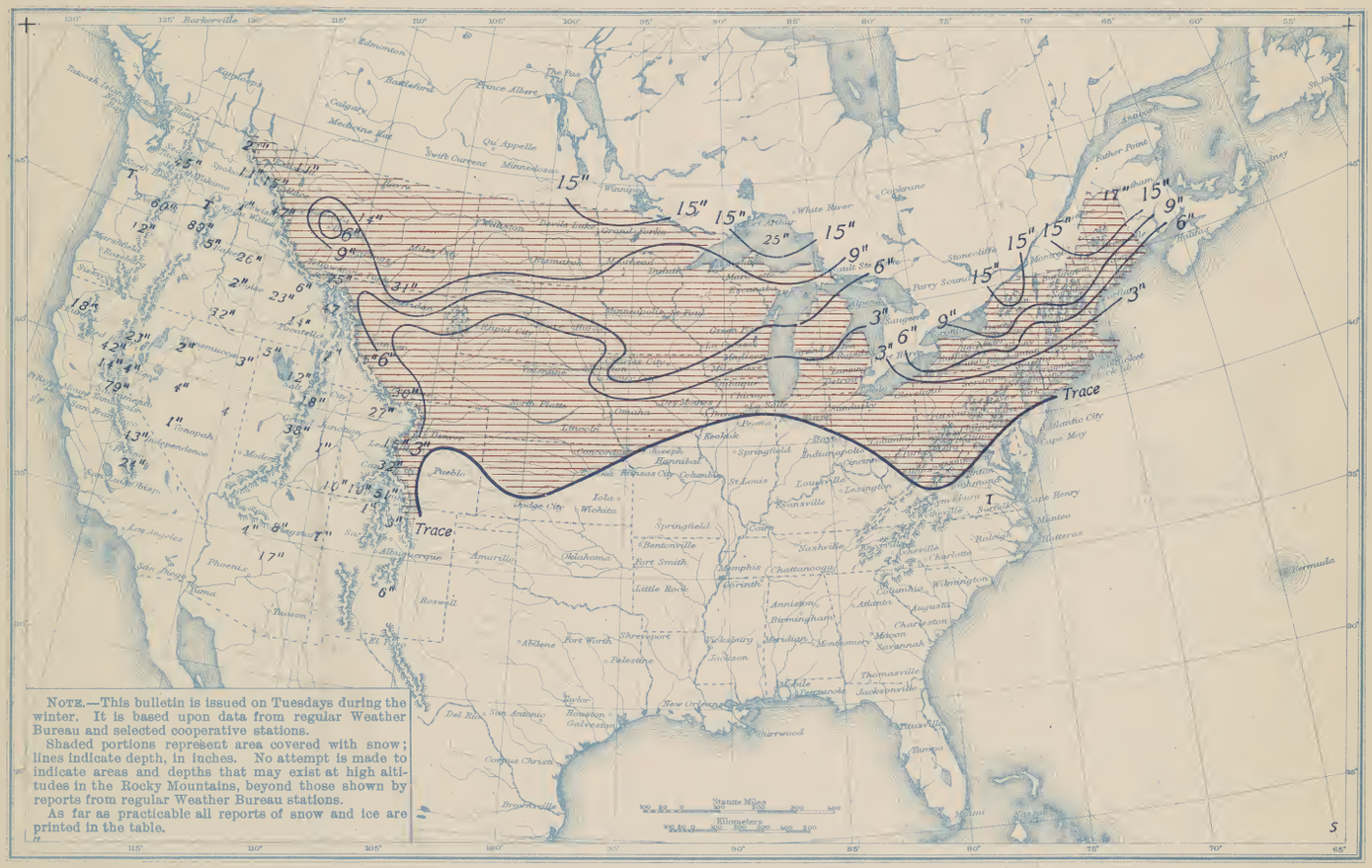
SNOW AND ICE BULLETIN.



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Shaded portions represent area covered with snow; lines indicate depth, in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond those shown by reports from regular Weather Bureau stations.

As far as practicable all reports of snow and ice are printed in the table.

WASHINGTON, D. C., *January 2, 1917.*

GENERAL REVIEW OF THE WEATHER DURING THE WEEK.

The storm advancing from the central Rocky Mountain region referred to in last week's bulletin moved to the northeastward and by Wednesday morning was central near Lake Superior, but the area of precipitation extended far to the eastward and southward, and rain or snow had occurred in nearly all districts from the Mississippi Valley eastward, the rainfall being heavy in portions of the Gulf States. By Thursday morning the storm center had passed northeastward beyond the field of observation, but rain still persisted along the Atlantic coast, with some snow in the Ohio Valley and Lake region.

At the same time rain or snow, mostly light, prevailed over the Pacific Coast States and at points in the northern Plateau region. During Friday the weather cleared over most eastern and far western districts, and low temperatures with fair weather were general on that and the following day over all the northern and central portions of the country.

During Sunday and Monday low pressure prevailed over most northern districts, and light rains or snows occurred over considerable areas to eastward of the Mississippi River.

At this writing low pressure is developing in the far Northwest, with rain along the Pacific coast from central California northward and local snows in the northern Plateau region. Over other portions of the country the weather is very generally fair and moderately warm.

DEPTH OF SNOW.

No substantial increase in the depth of the snow cover appears to have occurred during the week just closed, save in North Dakota and portions of Minnesota where the fall ranged from 2 to 7 inches. A considerable reduction in snow depth is reported from the Lake region and adjoining portions of the middle Mississippi and lower Ohio drainage areas, and smaller amounts disappeared from points in New England and the mountain regions of the West. On the whole the extent of snow covered area is not greatly different from that of last week, and the northern portions of the winter wheat region still remain fairly well covered.

In the western mountain districts and near the Pacific coast there was a very general, but small, reduction in the depth of snow cover at the lower elevations, but in the high mountains there was a further slight accumulation in most districts, and the indications are that the amounts are now very generally up to or above the normal for the period of the year.

ICE IN RIVERS AND HARBORS.

Continued cold weather over the northern and central portions of the country during the greater part of the week caused a very general increase in the amount of ice on the rivers and lakes of those regions. The greatest increases occurred in the upper Mississippi and its tributaries where the ice now ranges from 8 to nearly 15 inches. The upper Missouri and its tributaries likewise had considerable increases and are now covered with ice from 10 inches to nearly 2 feet in thickness.

There was a very general increase in the ice on the Great Lakes, and practically all harbors where natural conditions prevail are now ice-bound. The Ohio continues open, and but little ice has yet formed on the larger rivers of the Atlantic coast south of the Hudson. In New England small increases are reported, and on the streams and lakes of Maine the ice is now a foot or more in thickness.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., JANUARY 1, 1916.

Stations.	Snow.	Ice in rivers, harbors, etc.
Arizona.	*Inches*	*Inches*
Flagstaff	8	.....
Prescott	4	.....
California.		
Cascade	24	.....
Huntington Lake	48	.....
Sierraville	14	.....
Colorado.		
Denver	1	.....
Durango	10	.....
Leadville	16	.....
Connecticut.		
Hartford	T.	*
New Haven	T.	.....
Dist. of Columbia.		
Washington	0	*
Idaho.		
Boise	2	.....
Elk Creek	47	.....
Lewiston	1	.....
Mackay	6	.....
Pocatello	14	.....
Silver City	32	.....
Wallace	15	.....
Illinois.		
Chicago	T.	.....
Peoria	0	9.0
Walnut	1	.....
Indiana.		
Fort Wayne	T.	.....
Terre Haute	0	4.0
Iowa.		
Charles City	6	.....
Davenport	2	11.0
Des Moines	2	13.0
Dubuque	3	14.5
Keokuk	0	9.0
Sioux City	7	10.0
Kansas.		
Concordia	1	.....
Dodge City	T.	.....
Maine.		
Bangor	8	12.0
Cornish	12	.....
Eastport	4	.....
Gardiner	7	13.0
Greenville	18	13.0
Lewiston	5	11.0
Maryland.		
Frederick	T.	.....
Massachusetts.		
Adams	5	.....
Boston	T.	.....
Nantucket	0	*
Michigan.		
Alpena	5	10.0
Calumet	25	.....
Detroit	1	8.0
Escanaba	6	13.0
Grand Rapids	4	.....
Houghton	15	9.0
Lansing	2	.....
Ludington	8	.....
Marquette	12	4.0
Port Huron	2	8.0
Saginaw	3	9.0
Sault Ste. Marie	10	1.5
Minnesota.		
Collegeville	7	.....
Duluth	1	20.0
Minnesota—Contd.	*Inches*	*Inches*
Leech Lake Dam	6	.....
Minneapolis	8	.....
Moorhead	11	17.0
Roseau	18	.....
St. Paul	8	8.0
Thief River Falls	15	.....
Missouri.		
Hannibal	0	*
Kansas City	0	‡
St. Joseph	T.	‡
Montana.		
Bowen	8	.....
Bozeman	9	.....
Butte	20	.....
Findon	14	.....
Havre	10	.....
Helena	3	.....
Kalispell	11	.....
Miles City	11	.....
Nebraska.		
Lincoln	T.	.....
North Platte	1	.....
Omaha	1	§
Valentine	2	.....
Nevada.		
Austin	4	.....
McGill	4	.....
Reno	4	.....
Tonopah	1	.....
Winnemucca	2	.....
New Hampshire.		
Bethlehem	12	.....
Concord	7	8.0
Keene	5	.....
New Jersey.		
Cape May	0	2.0
Newton	2	.....
Plainfield	T.	.....
New Mexico.		
Cloudcroft	6	.....
Taos	3	.....
Tres Piedras	1	.....
New York.		
Albany	1	6.5
Angelica	7	.....
Binghamton	2	.....
Buffalo	7	5.5
Canton	9	.....
Cazenovia	9	.....
Ithaca	2	.....
Ogdensburg	15	.....
Oswego	10	1.5
Perrysburg	13	.....
Rochester	6	6.5
Rome	12	.....
Roxbury	6	.....
Syracuse	4	.....
North Dakota.		
Bismarck	15	23.0
Devils Lake	10	.....
Williston	10	17.0
Ohio.		
Cambridge	T.	.....
Canton	2	.....
Cleveland	0	4.0
Columbus	T.	.....
Millersburg	2	.....
Sandusky	0	9.5
Toledo	T.	4.0
Oregon.	*Inches*	*Inches*
Baker	5	.....
Condon	80	.....
Detroit	12	.....
Gov't Camp	60	.....
Sparta	26	.....
Welches	4	.....
Pennsylvania.		
Allentown	T.	.....
Coatesville	2	.....
Drifton	3	.....
Emporium	2	.....
Erie	2	4.0
Harrisburg	9	.....
Pittsburgh	T.	.....
Reading	T.	.....
Scranton	T.	.....
Stroudsburg	3	.....
Rhode Island.		
Narragansett Pier	T.	.....
Providence	T.	*
South Dakota.		
Huron	6	17.0
Pierre	3	19.0
Rapid City	2	.....
Yankton	1	14.0
Utah.		
Green River	1	.....
Heber	18	.....
Kelton	5	.....
Salt Lake City	12	.....
Thistle	38	.....
Vermont.		
Brattleboro	6	10.0
Burlington	10	*
Northfield	10	.....
St. Johnsbury	6	.....
Virginia.		
Callaville	T.	.....
Washington.		
Centralia	T.	.....
Laurier	21	.....
Spokane	11	.....
Stampede	45	.....
Walla Walla	T.	.....
West Virginia.		
Hinton	T.	.....
Holcomb	1	.....
Parkersburg	0	†
Wisconsin.		
Barron	6	.....
Fond du Lac	4	.....
Green Bay	5	9.0
La Crosse	8	14.0
Madison	6	.....
Milwaukee	2	.....
Park Falls	4	.....
Wausau	6	7.0
Wyoming.		
Buffalo	9	.....
Dome Lake	31	.....
Dubois	T.	.....
Evanston	7	.....
Fox Park	30	.....
Lander	5	.....
Sheridan	7	.....
South Pass City	15	.....
Valley	3	.....
Wyncote	T.	.....
Yellowstone Park	25	.....

*Shore ice. †Floating ice. ‡Ice gorged. §Measurement impracticable. T. indicates trace.

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No. 6. Winter 1916-17.

U. S. DEPARTMENT OF AGRICULTURE,
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SNOW AND ICE BULLETIN.

NOTE.—This bulletin is issued on Tuesdays during the winter. It is based upon data from regular Weather Bureau and selected cooperative stations.

Shaded portions represent area covered with snow; lines indicate depth, in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond those shown by reports from regular Weather Bureau stations.

As far as practicable all reports of snow and ice are printed in the table.

WASHINGTON, D. C., *January 9, 1917.*

GENERAL SUMMARY OF THE WEATHER DURING THE WEEK.

The early part of the week just closed was marked by falling pressure over large areas and unsettled weather prevailed in many districts. The precipitation was light, however, and on account of the prevailing high temperatures was mostly in the form of rain.

By Thursday two principal centers of low pressure were observed, one over Oklahoma and the other over northern Montana. The one over Oklahoma developed considerable intensity and by Friday morning had moved to Ohio and the lower Lake region, accompanied by heavy rains and thunderstorms over the Ohio and lower Mississippi Valleys, and by lighter falls to the eastward and westward, with local light snows in the upper Lake region.

During the following 24 hours the storm moved rapidly to the St. Lawrence Valley and clearing, colder weather followed over most districts to eastward of the Mississippi. Local snows occurred during Sunday and Monday along the northern boundary and at points in the western mountains, but over the greater part of the country the last two days of the week were clear, with a very general warming up at the close, over districts to eastward of the Rocky Mountains, especially in the Northwest. Over the far Southwest the weather was clear and decidedly cold at the close of the week.

At this writing the pressure is falling over nearly all portions of the country, and especially in the northern districts to eastward of the Rocky Mountains, and snow is falling at a few points. Over other districts fair weather prevails, and abnormally high winter temperatures are the rule in all sections, except in portions of the far Southwest.

DEPTH OF SNOW.

The snowfall during the week was light in nearly all districts and, due to the prevailing warmth, a considerable portion of that remaining on the ground at the close of the preceding week disappeared, the depths at the present time ranging generally from 2 to 6 inches less than at the same time last week, except in a few scattered localities where there were slight increases.

In the western mountain districts, especially over the northern portions, the snowfall during the winter so far has been generally above normal, and the outlook for a good supply of water during the coming summer appears satisfactory. On account of the prevailing snow cover in the more northern districts stock has suffered somewhat, and more than the usual amount of feeding has been required.

The northern portion of the winter wheat belt still remains lightly covered, and the crop is generally reported in good condition.

ICE IN RIVERS AND HARBORS.

A change to more moderate temperatures over most districts during the past week prevented any large increase in the ice thickness, except in northern New England where the weather continued cold throughout most of the period.

The upper portions of the Mississippi and Missouri and their tributaries continue heavily ice bound, and similar conditions prevail generally over the upper Lakes. In the lower Lakes some ice disappeared during the week and a few of the ports are now open.

No appreciable ice has yet formed on the Ohio River, and the main streams of the Atlantic coast south of the Hudson continue open. In New England the ice has now reached a thickness varying from 14 inches in the upper portion of the Connecticut River to more than 2 feet in central Maine, and harvesting is now progressing in some localities.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., JANUARY 8, 1917.

Stations.	Snow.	Ice in rivers, harbors, etc.
Arizona.	*Inches*	*Inches*
Carrs Ranch	3	.....
Flagstaff	7	.....
Pinto	2	.....
Prescott	16	.....
California.		
Cascade	20	.....
Huntington Lake	48	.....
Inskip	54	.....
Squirrel Inn	21	.....
Summit	76	.....
Yosemite	35	.....
Colorado.		
Crested Butte	30	.....
Cumbres	44	.....
Denver	T.	.....
Durango	8	.....
Grand Junction	T.	.....
Leadville	15	.....
Rico	9	.....
Steamboat Springs	26	.....
Connecticut.		
Hartford	.....	*
New Haven	1	.....
West Cornwall	2	.....
Idaho.		
Boise	T.	.....
Driggs	26	.....
Elk Creek	54	.....
Hailey	22	.....
Idaho City	28	.....
Mackay	25	.....
McCall	37	.....
Pocatello	8	.....
Port Hill	3	.....
Soldier Creek	33	.....
Spencer	8	.....
Vienna	40	.....
Illinois.		
Antioch	T.	.....
Peoria	.....	7.0
Indiana.		
Terre Haute	.....	†
Iowa.		
Charles City	2	.....
Davenport	.....	11.0
Des Moines	T.	14.0
Dubuque	1	14.5
Forest City	6	.....
Iowa City	T.	.....
Keokuk	.....	8.0
Pocahontas	3	.....
Sioux City	2	11.0
Kansas.		
Concordia	T.	.....
Maine.		
Bangor	6	14.0
Cornish	11	.....
Eastport	2	.....
Gardiner	6	18.0
Greenville	23	25.0
Lewiston	3	13.0
Millinocket	17	.....
Portland	3	.....
Maryland.		
Frederick	T.	.....
Massachusetts.		
Fitchburg	4	.....
Holyoke	4	.....
Mansfield	T.	.....
Nantucket	.....	*
Turners Falls	6	.....
Michigan.		
Alpena	4	*†
Big Rapids	4	.....
Cadillac	6	.....
Calumet	20	.....
Detroit	.....	9.0
Escanaba	4	14.0
Houghton	12	11.0
Iron Mountain	5	.....
Ironwood	6	.....
Ludington	6	.....
Manistee	3	.....
Marquette	11	2.0
Port Huron	1	7.0
Saginaw	2	9.0
St. Ignace	4	.....
Sault Ste. Marie	10	6.0
Minnesota.		
Duluth	1	22.0
Fort Ripley	8	.....
Mankato	8	.....
Minneapolis	7	.....
Moorhead	6	24.0
Roseau	18	.....
St. Paul	7	12.0
Thief River Falls	15	.....
Winton	5	.....
Missouri.		
Hannibal	.....	*
St. Joseph	.....	‡
Montana.		
Billings	7	.....
Bozeman	8	.....
Butte	9	.....
Findon	18	.....
Glacier Park	20	.....
Glasgow	23	.....
Red Lodge	10	.....
Snow Belt	9	.....
Virginia City	8	.....
Havre	2	.....
Helena	1	.....
Kalispell	6	.....
Miles City	8	.....
Nebraska.		
Guide Rock	T.	.....
Omaha	T.	‡
Tekamah	2	.....
Valentine	T.	.....
Nevada.		
Austin	8	.....
Elko	4	.....
Reno	T.	.....
Tonopah	1	.....
Winnemucca	7	.....
New Hampshire.		
Bethlehem	10.0	.....
Concord	6	11.0
Hanover	6	.....
Keene	6	.....
W. Stewartstown	10	.....
New Mexico.		
Taos	2	.....
New York.		
Albany	T.	4.0
Buffalo	T.	6.0
Canton	6	.....
Cazenovia	4	.....
De Ruyter	4	.....
Herkimer	3	.....
Ithaca	T.	.....
New York—Contd.		
Malone	2	.....
Ogdensburg	8	.....
Oswego	4	.....
Perrysburg	4	.....
Plattsburg	13	.....
Rochester	T.	.....
Rome	4	.....
Roxbury	5	.....
Saratoga	3	.....
North Dakota.		
Bismarck	8	24.0
Devils Lake	T.	.....
Williston	4	.....
Ohio.		
Sandusky	.....	8.5
Toledo	.....	3.0
Oregon.		
Baker	3	.....
Detroit	5	.....
Hilgard	10	.....
Siskiyou	23	.....
Pennsylvania.		
Drifton	2	.....
Erie	.....	4.0
Harrisburg	.....	†
South Dakota.		
Huron	2	18.0
Pierre	T.	19.0
Rapid City	T.	.....
Yankton	T.	14.0
Utah.		
Green River	3	.....
Heber	15	.....
Kelton	6	.....
Logan	12	.....
Salt Lake City	12	.....
Thistle	24	.....
Vermont.		
Brattleboro	8	14.0
Burlington	9	.....
Northfield	15	.....
St. Johnsbury	9	.....
Wells River	5	.....
Washington.		
Cascade Tunnel	71	.....
Laurier	23	.....
North Yakima	5	.....
Spokane	2	.....
Stampede	47	.....
Wisconsin.		
Barron	6	.....
Eau Claire	8	.....
Fond du Lac	3	.....
Grand Rapids	6	.....
Green Bay	2	9.0
La Crosse	5	14.5
Madison	3	.....
Medford	5	.....
Milwaukee	T.	.....
Park Falls	3	.....
Wausau	5	9.0
Wyoming.		
Dome Lake	27	.....
Evanston	8	.....
Fox Park	28	.....
Lander	2	.....
Sheridan	4	.....
South Pass City	12	.....
Valley	3	.....
Yellowstone Park	22	.....

*Shore ice. †Floating ice. ‡Ice gorged. §Measurement impracticable. T. indicates trace.

No. 7. Winter 1916-17.

U. S. DEPARTMENT OF AGRICULTURE,
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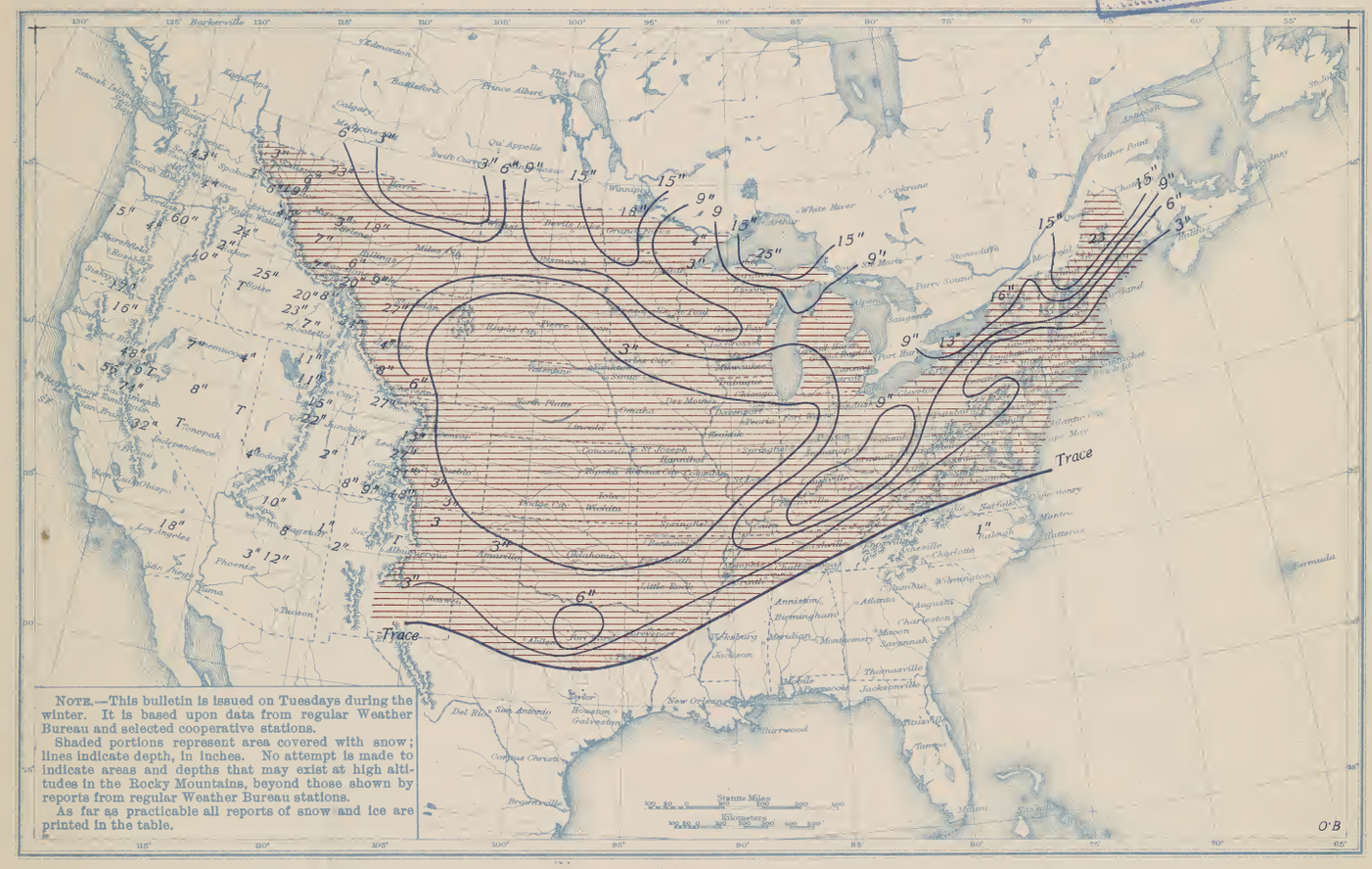
SNOW AND ICE BULLETIN.



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Shaded portions represent area covered with snow; lines indicate depth, in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond those shown by reports from regular Weather Bureau stations.

As far as practicable all reports of snow and ice are printed in the table.

WASHINGTON, D. C., *January 16, 1917.*

GENERAL SUMMARY OF THE WEATHER DURING THE PAST WEEK.

The low pressure along the northern border referred to in the issue of last week developed into a storm of considerable proportions, and by Wednesday morning it had moved to the lower Lake region, and light snows had fallen along the northern border from the Dakotas to New England. During the following 24 hours the storm moved to the Atlantic coast, but without much additional precipitation. Over the western districts fair and cold weather prevailed the first half of the week, and it was generally clear and somewhat colder in the South. During Friday and Saturday light snows or rains occurred over portions of the Central Valleys, extending by Sunday into the Atlantic Coast States, with some heavy rains in the Gulf States and considerable snow in portions of the Ohio Valley and lower Lake region. By Monday morning severe cold had overspread practically all northern and central districts, but in the far Southwest a storm of considerable extent had developed, and light snow was falling over the middle Plains region and thence eastward to the lower Ohio Valley, and sleet or rain prevailed generally over the Gulf and South Atlantic States.

At this writing light snow is falling at points in the Great Plains and southern mountain districts, and rains prevail over portions of the East Gulf and South Atlantic States, but over the northern and far western districts clear and cold weather continues.

DEPTH OF SNOW.

From the Rocky Mountains eastward some snow occurred during the week over practically all districts from central Texas and the northern portions of the Gulf and South Atlantic States to the Canadian boundary, the falls being quite heavy in portions of the Ohio Valley and lower Lake region and locally in north-central Texas. In the mountain regions of the West there was little snow during the week, and locally at the lower elevations the depth is now several inches less than was reported last week.

Heavy snow now covers the ground over most northern districts, the greater part of the Ohio Valley, and portions of the Appalachian Mountain region, and considerable snow still remains at the lower levels of the western mountain regions.

The greater part of the winter wheat belt has some protection from the severe cold now prevailing, but the covering is only slight at many points. Continued cold, with considerable snow cover for several weeks over the principal stock-raising sections of the West, has necessitated much feeding and probably caused some suffering to cattle exposed on the open ranges.

ICE IN RIVERS AND HARBORS.

Cold weather during the greater part of the week resulted in the formation of considerable additional ice over the main streams and lakes of all northern districts and of some new ice on the smaller streams of the central districts, appreciable amounts being reported from points in north-central Texas and northern Mississippi.

Ice ranging from one foot to nearly three feet in thickness covers the more northern streams, but the Ohio still remains open and no heavy ice appears to have formed on the main streams of the Atlantic coast south of the Hudson.

The harbors of the upper Lakes continue heavily ice-bound, and considerable ice formed during the week on the lower Lakes.

In New England the harvest continues and a good quality of ice is being gathered.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., JANUARY 15, 1917.

Stations.	Snow.	Ice in rivers, harbors, etc.
Arizona.	*Inches*	*Inches*
Flagstaff	8	.....
Grand Canyon	10	.....
Arkansas.		
Bentonville	1	.....
Little Rock	4	.....
California.		
Inskip	48	.....
Portola	19	.....
Summit	74	.....
Table Rock	56	.....
Yosemite	32	.....
Colorado.		
Crested Butte	27	.....
Denver	1	.....
Durango	9	.....
Grand Junction	1	.....
Leadville	13	.....
Steamboat Springs	27	.....
Connecticut.		
Hartford	.....	*
Dist. of Columbia.		
Washington	T.	1.0
Idaho.		
Boise	T.	.....
Elk Creek	49	.....
Mackay	23	.....
Pocatello	7	.....
Soldier Creek	32	.....
Illinois.		
Cairo	6	†
Chicago	5	.....
Peoria	2	6.0
Indiana.		
Evansville	6	.....
Indianapolis	2	.....
Jeffersonville	9	.....
Terre Haute	1	2.0
Iowa.		
Charles City	2	.....
Davenport	2	13.5
Des Moines	T.	15.0
Dubuque	3	16.0
Keokuk	T.	11.0
Sioux City	T.	19.0
Kansas.		
Concordia	1	.....
Dodge City	2	.....
Topeka	1	.....
Wichita	2	.....
Kentucky.		
Bowling Green	12	.....
Lexington	13	.....
Louisville	9	.....
Mount Sterling	20	.....
Louisiana.		
Shreveport	1	.....
Maine.		
Bangor	T.	17.0
Gardiner	4	14.0
Greenville	23	26.0
Lewiston	1	15.0
Portland	2	.....
Maryland.		
Baltimore	1	.....
Massachusetts.		
Holyoke	2	.....
Turners Falls	4	.....
Michigan.		
Alpena	4	7.0
Calumet	25	.....
Chatham	20	.....
Detroit	6	7.0
Escanaba	4	19.0

Stations.	Snow.	Ice in rivers, harbors, etc.
Michigan—Contd.	*Inches*	*Inches*
Grand Haven	3	.....
Grand Rapids	4	.....
Houghton	16	12.5
Lansing	6	.....
Ludington	9	.....
Marquette	13	6.0
Port Huron	6	8.5
Saginaw	5	10.5
Sault Ste. Marie	9	13.0
Minnesota.		
Duluth	3	24.0
Minneapolis	11	.....
Moorhead	10	34.0
Roseau	18	.....
St. Paul	10	13.0
Thief River Falls	17	.....
Mississippi.		
Corinth	.....	0.5
Missouri.		
Columbia	1	.....
Hannibal	.....	*†
Ironton	2	.....
Kansas City	1	†
Mountain Grove	2	.....
St. Joseph	1	‡
St. Louis	2	†
Springfield	1	.....
Montana.		
Havre	2	.....
Helena	3	.....
Kalispell	6	.....
Miles City	6	.....
Nebraska.		
North Platte	1	.....
Omaha	1	22.0
Valentine	1	.....
Nevada.		
Austin	8	.....
Reno	T.	.....
Winnemucca	7	.....
New Hampshire.		
Bethlehem	6	.....
Concord	3	14.0
W. Stewartstown	15	.....
New Jersey.		
Atlantic City	T.	.....
Cape May	T.	1.0
Sandy Hook	2	.....
Trenton	2	†
New Mexico.		
Corona	2	.....
Des Moines	3	.....
Raton	3	.....
Raton Pass	8	.....
Roswell	1	.....
Santa Fe	T.	.....
New York.		
Albany	T.	7.0
Binghamton	T.	.....
Buffalo	13	10.0
Canton	16	.....
Herkimer	4	.....
Ithaca	T.	.....
Lowville	12	.....
Malone	2	.....
New York	1	.....
Ogdensburg	2	.....
Oswego	10	3.0
Plattsburg	7	.....
Rochester	9	4.0
Syracuse	2	.....
North Carolina.		
Raleigh	1	.....

Stations.	Snow.	Ice in rivers, harbors, etc.
North Dakota.	*Inches*	*Inches*
Bismarck	9	25.0
Devils Lake	10	.....
Williston	2	20.5
Ohio.		
Cincinnati	7	.....
Cleveland	6	5.5
Columbus	10	.....
Dayton	6	.....
Sandusky	6	10.0
Somerset	12	.....
Toledo	5	6.5
Oklahoma.		
Oklahoma	2	.....
Oregon.		
Baker	2	.....
Detroit	4	.....
Gov't Camp	60	.....
Hilgard	24	.....
Prairie City	10	.....
Siskiyou	17	.....
Sparta	15	.....
Pennsylvania.		
Erie	6	5.0
Harrisburg	4	†
Hyndman	3	.....
Philadelphia	1	.....
Pittsburgh	4	.....
Reading	4	.....
South Dakota.		
Huron	T.	21.0
Pierre	T.	21.0
Yankton	T.	17.0
Tennessee.		
Memphis	4	.....
Nashville	3	.....
Texas.		
Abilene	4	.....
Amarillo	4	.....
Dallas	6	1.0
Fort Worth	8	.....
Palestine	T.	.....
Utah.		
Heber	15	.....
Logan	11	.....
Modena	4	.....
Salt Lake City	11	.....
Thistle	22	.....
Vermont.		
Brattleboro	5	16.0
Burlington	9	*
Northfield	16	.....
Washington.		
North Yakima	4	.....
Stampede	43	.....
West Virginia.		
Elkins	3	.....
Holcomb	2	.....
Parkersburg	6	†
Wisconsin.		
Fond du Lac	6	.....
Grand Rapids	10	.....
Green Bay	3	10.5
La Crosse	7	16.0
Madison	5	.....
Milwaukee	4	.....
Wausau	8	10.0
Wyoming.		
Alta	34	.....
Cheyenne	2	.....
Dome Lake	27	.....
Lander	4	.....
South Pass City	8	.....
Yellowstone Park	20	.....

*Shore ice. †Floating ice. ‡Ice gorged. ?Measurement impracticable. T. indicates trace.

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No. 8. Winter 1916-17.

U. S. DEPARTMENT OF AGRICULTURE,
WEATHER BUREAU.

CHARLES F. MARVIN, CHIEF.

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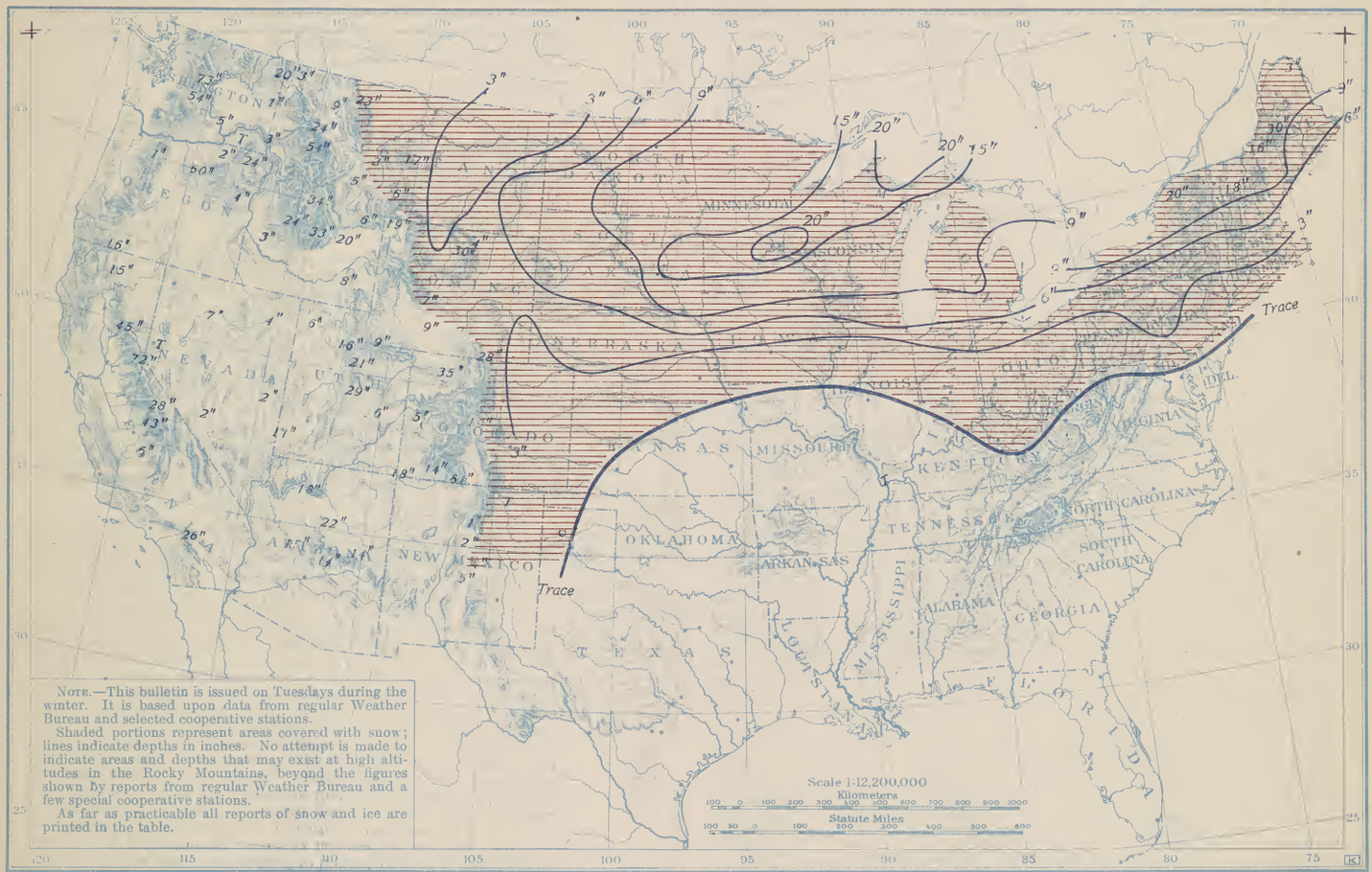
SNOW AND ICE BULLETIN.



NOTE.—This bulletin is issued on Tuesdays during the winter. It is based upon data from regular Weather Bureau and selected cooperative stations.

Shaded portions represent areas covered with snow; lines indicate depths in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond the figures shown by reports from regular Weather Bureau and a few special cooperative stations.

As far as practicable all reports of snow and ice are printed in the table.

WASHINGTON, D. C., *January 23, 1917.*

GENERAL SUMMARY OF THE WEATHER DURING THE PAST WEEK.

The unsettled weather over the far Southwest at the beginning of the week did not move eastward to any extent, and by Wednesday morning rain or snow was confined to limited areas in the South only, and during the following two days fair weather prevailed, save for local light rains or snows, over all parts of the country.

By Saturday morning low pressure had developed over the Plateau, and light local snows had set in over that region and along the northern border, and rain was falling at points in the South. During the following 24 hours the storm developed considerable intensity and moved rapidly northeastward, accompanied by snows over large areas in the central and northern districts from the Lake region and Ohio Valley westward, and by rains in the South and the far Northwest. By Monday morning the storm center had moved to the St. Lawrence Valley, and snow had fallen over most northern districts from the Rocky Mountains eastward, rain or snow had prevailed over the Ohio Valley and Middle Atlantic States and general rains to the Southward. The snowfall was heavy in many northern districts and seriously interrupted transportation.

At this writing clear and cold weather prevails over all northern and central districts to eastward of the Rocky Mountains, except in the upper Missouri Valley where it is warming up rapidly. Local rains prevail in the Gulf and South Atlantic States, and snow is falling at points in the northern Rocky Mountains.

DEPTH OF SNOW.

The general rains and warmer weather of Sunday over central and southern districts carried off practically all the considerable body of snow on the ground at the beginning of the week from the Ohio Valley southwestward to north-central Texas. At the same time heavy snows to the northward considerably increased the depths, especially over the upper Mississippi Valley and adjacent districts, where high winds probably caused much drifting and interference with traffic. From the Rocky Mountains westward there was a very general increase in depth over the districts where snow prevailed at the beginning of the week, the increases being especially marked in western Colorado, Utah, and northern Arizona, and in the far Northwest.

The greater part of the winter wheat area is now bare of snow, or has but a slight covering, but in the spring wheat region the ground is heavily covered, assuring a good supply of moisture to the soil later in the season.

In portions of the western mountain districts unusual cold has prevailed during the past ten days or two weeks, the average temperature from January 10 to 20 ranged from 20° to 30° or more below the normal for that period in portions of Nevada and adjacent States, and with the ground generally snow-covered for several weeks past, extra feeding of stock has been necessary, and doubtless much suffering has been experienced.

ICE IN RIVERS AND HARBORS.

A further continuation of cold weather over the northern and central districts caused the formation of additional ice on practically all streams and lakes where it had previously been reported. The Missouri and Mississippi Rivers are now heavily covered in their upper portions, as well as their tributaries in those regions, and considerable ice has formed on the northern tributaries of the Ohio, although only floating ice is reported from the main stream.

In New England and the Lake region there was a further increase of several inches in thickness and harvesting is now in operation or will soon begin in all districts where ice is usually cut.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., JANUARY 22, 1917.

Stations.	Snow.	Ice in rivers, harbors, etc.
Arizona.	*Inches*	*Inches*
Flagstaff	22	.....
Grand Canyon	18	.....
Prescott	5	.....
California.		
Huntington Lake	43	.....
Inskip	45	.....
Summit	72	.....
Yosemite	28	.....
Colorado.		
Cumbres	61	.....
Denver	1	.....
Durango	14	.....
Grand Junction	5	.....
Leadville	19	.....
Steamboat Springs	35	.....
Connecticut.		
Hartford	3	*
New Haven	T.	10.0
Dist. of Columbia.		
Washington	.....	1.5
Idaho.		
Boise	3	.....
Oxford Ranger Sta.	54	.....
Hailey	22	.....
Lewiston	3	*†
McCall	34	.....
Pocatello	8	.....
Wallace	9	.....
Illinois.		
Cairo	.....	*
Chicago	6	.....
Peoria	T.	5.0
Walnut	2	.....
Indiana.		
Fort Wayne	2	.....
La Fayette	T.	.....
Richmond	T.	.....
Terre Haute	.....	2.5
Valparaiso	2	.....
Iowa.		
Charles City	.....	6.5
Davenport	T.	16.0
Des Moines	3	17.5
Dubuque	5	17.5
Estherville	9	.....
Keokuk	.....	11.0
Pocahontas	7	.....
Sioux City	7	22.0
Kansas.		
Concordia	T.	.....
Garden City	T.	.....
Iola	.....	3.5
Kentucky.		
Eubank	T.	.....
Maysville	T.	.....
Maine.		
Bangor	6	19.0
Cornish	18	.....
Eastport	5	.....
Gardiner	6	15.0
Greenville	30	27.0
Orono	4	.....
Portland	8	.....
Redington	16	.....
Massachusetts.		
Boston	2	.....
Fitchburg	4	.....
Mansfield	4	.....
Michigan.		
Alpena	12	*†
Cadillac	15	.....
Calumet	26	.....
Detroit	8	10.0
Escanaba	14	7.0
Michigan—Contd.		
Grand Haven	7	.....
Grand Rapids	6	.....
Houghton	18	15.5
Lansing	9	.....
Ludington	11	.....
Manistee	12	.....
Marquette	20	8.0
Newberry	15	.....
Port Huron	8	12.0
Saginaw	8	10.5
St. Ignace	8	.....
Sault Ste. Marie	14	15.0
Minnesota.		
Duluth	10	26.0
Fort Ripley	14	.....
Leech Lake Dam	10	.....
Minneapolis	24	.....
Moorhead	11	35.0
Roseau	18	.....
St. Paul	25	14.0
Missouri.		
Hannibal	.....	*‡
Kansas City	.....	†
St. Joseph	.....	‡
St. Louis	.....	†
Montana.		
Billings	T.	.....
Butte	5	.....
Glacier Park	23	.....
Haugan	24	.....
Havre	4	.....
Helena	3	.....
Kalispell	9	.....
Miles City	6	.....
Nebraska.		
Columbus	2	.....
Halsey	4	.....
North Platte	4	.....
Omaha	1	‖
Tekamah	5	.....
Valentine	3	.....
Nevada.		
Elko	4	.....
McGill	2	.....
Reno	T.	.....
Tonopah	2	.....
Winnemucca	7	.....
New Hampshire.		
Concord	7	17.0
Hanover	8	.....
Keene	7	.....
New Jersey.		
Phillipsburg	1	.....
New Mexico.		
Corona	5	.....
Las Vegas	4	.....
Santa Fe	1	.....
New York.		
Albany	2	8.0
Buffalo	13	12.0
Canton	20	.....
Cazenovia	10	.....
Ithaca	1	.....
Malone	7	.....
Oswego	12	4.0
Plattsburg	7	.....
Rochester	10	5.5
Rome	12	.....
Syracuse	5	.....
North Dakota.		
Bismarck	11	27.0
Devils Lake	9	.....
Williston	2	22.0
Ohio.		
Canton	3	.....
Cincinnati	T.	†
Cleveland	1	6.0
Columbus	2	.....
Dayton	T.	.....
Sandusky	3	12.0
Tiffin	3	.....
Toledo	4	6.0
Wapakoneta	3	.....
Oregon.		
Baker	4	.....
Gov't Camp	60	.....
Hilgard	24	.....
Pendleton	2	.....
Siskiyou	16	.....
Pennsylvania.		
Coatesville	2	.....
Erie	2	8.0
Harrisburg	4	†
Mifflintown	4	.....
Philadelphia	T.	.....
Pittsburgh	T.	†
Reading	1	.....
Scranton	T.	.....
Stroudsburg	2	.....
Rhode Island.		
Kingston	2	.....
South Dakota.		
Huron	16	22.0
Pierre	6	22.0
Rapid City	6	.....
Yankton	12	21.0
Texas.		
Amarillo	T.	.....
Utah.		
Green River	6	.....
Heber	21	.....
Modena	11	.....
Salt Lake City	16	.....
Thistle	29	.....
Vermont.		
Brattleboro	5	16.0
Burlington	14	*
Northfield	18	.....
St. Johnsbury	12	.....
Washington.		
Cascade Tunnel	73	.....
Laurier	20	.....
North Yakima	5	.....
Spokane	1	.....
Stampede	54	.....
Walla Walla	T.	.....
West Virginia.		
Parkersburg	T.	†
Wisconsin.		
Brodhead	9	.....
Delavan	6	.....
Fond du Lac	12	.....
Green Bay	11	11.0
La Crosse	14	20.0
Madison	4	.....
Medford	7	.....
Milwaukee	8	.....
Wausau	16	11.5
Wyoming.		
Cheyenne	1	.....
Dome Lake	30	.....
Fox Park	28	.....
Lander	7	.....
Sheridan	4	.....
South Pass City	9	.....
Valley	2	.....
Yellowstone Park	19	.....

* Shore ice. † Floating ice. ‡ Ice gorged. ‖ Measurement impracticable. T. indicates trace.

No. 9. Winter 1916-17.

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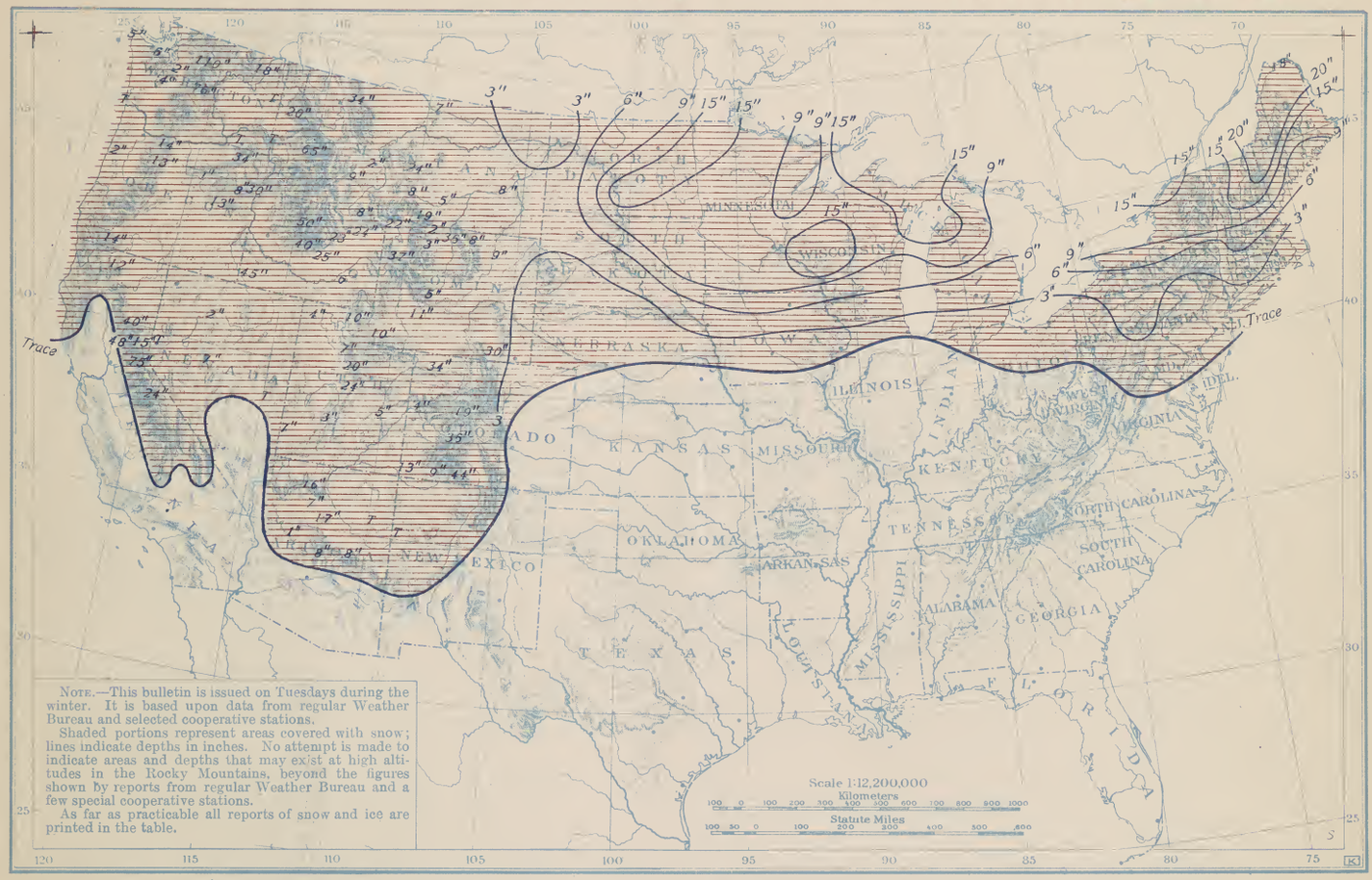
SNOW AND ICE BULLETIN.



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Shaded portions represent areas covered with snow; lines indicate depths in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond the figures shown by reports from regular Weather Bureau and a few special cooperative stations.

As far as practicable all reports of snow and ice are printed in the table.

WASHINGTON, D. C., *January 30, 1917.*

GENERAL SUMMARY OF THE WEATHER DURING THE PAST WEEK.

The area of rain over the Southeastern States at the beginning of the week moved slowly northeastward along the coast, and more or less precipitation occurred over most districts to eastward of the Appalachian Mountains. At the same time low pressure moved eastward from the Lake region, accompanied by light snows from the upper Ohio drainage northeastward to New England. Only local light snows or rains occurred during the remainder of the week until about Saturday, when a storm of considerable intensity moved from the Pacific into the Canadian Northwest Provinces, causing rains and high winds in portions of Oregon and Washington, and local snows in the northern Rocky Mountain region.

During Saturday night and Sunday considerable rain occurred over the Ohio Valley and portions of the Gulf States, and snow was fairly general from the Lake region and Middle Atlantic States northeastward to New England and in portions of the Northwest.

During Monday rain was general, and at some points heavy, in portions of the Ohio and lower Mississippi Valleys, and thence eastward over the Gulf and Atlantic Coast States, and snow was reported locally in the mountain regions of the Northwest, and elsewhere near the northern border.

At this writing low pressure prevails over the northern Rocky Mountain region, attended by snow to the westward and rain in northern California. Elsewhere fair weather prevails with a change to decidedly cold in the Northwest.

DEPTH OF SNOW.

During the week just closed a considerable amount of snow disappeared from the southern portions of the country that were covered at the end of last week, although the snow-covered area remains about the same. Warm rains carried off from 3 to 5 inches or more over a large area from the lower Missouri Valley eastward to the Great Lakes, and warmer weather reduced the depth in portions of Arizona and adjoining States by several inches. In the northern Rocky Mountain region and thence westward to the mountains of Oregon and Washington there was a very general increase in the depth of the snow cover, ranging from 6 inches or more in portions of Montana to 3 feet in the mountains of central Washington. Over the eastern portions of New York and very generally in New England the snow cover increased by several inches.

The winter wheat region continues largely bare, but temperature changes during the week were probably not such as to cause material injury to the fall-sown grains.

In the mountain regions of the West the falls during the past week in the northern districts have added considerably to the amounts already stored in the high mountains, which were generally reported as well above the average, thus indicating a plentiful supply of water during the coming growing season.

The ground still remains snow covered at the lower, as well as the higher, elevations of the western mountain districts, and stock feeding still appears necessary over large areas where winter grazing is usually possible at this period of the year. Temperatures, however, have been somewhat higher than in previous weeks and stock has probably suffered less.

ICE IN RIVERS AND HARBORS.

The weather was generally cold during the week over northern districts and the ice on the streams and lakes of those regions showed a very general, though small, increase in thickness. Over the central districts warm rains near the end of the week carried off some ice and the larger streams are mostly open. The main streams and lakes of New York and New England are now covered with ice of good quality and an excellent harvest is progressing.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., JANUARY 29, 1917.

Stations.	Snow.	Ice in rivers, harbors, etc.
Arizona.	*Inches*	*Inches*
Flagstaff	17	.....
Grand Canyon	16	.....
Prescott	1	.....
California.		
Inskip	40	.....
Portola	15	.....
Summit	75	.....
Table Rock	48	.....
Yosemite	24	.....
Colorado.		
Crested Butte	36	.....
Cumbres	44	.....
Denver	T.	.....
Durango	9	.....
Grand Junction	4	.....
Leadville	19	.....
Rico	13	.....
Steamboat Springs	34	.....
Connecticut.		
Hartford	3	*
West Cornwall	5	.....
Dist. of Columbia.		
Washington	T.	†
Idaho.		
Lewiston	T.	.....
Oxford Ranger Sta.	65	.....
Pocatello	6	.....
Silver City	45	.....
Soldier Creek	40	.....
Spencer	24	.....
Vienna	50	.....
Illinois.		
Cairo	.....	†
Chicago	T.	.....
Oregon	3	.....
Indiana.		
Fort Wayne	T.	.....
Terre Haute	.....	1.5
Iowa.		
Boone	2	.....
Davenport	.....	17.0
Des Moines	T.	19.0
Dubuque	2	19.0
Keokuk	.....	10.0
Pocahontas	7	.....
Sioux City	4	20.5
Maine.		
Bangor	6	20.0
Eastport	10	.....
Gardiner	7	17.0
Greenville	31	28.0
Lewiston	6	18.0
Millinocket	23	.....
Portland	11	.....
Van Buren	18	.....
Maryland.		
Baltimore	1	.....
Massachusetts.		
Adams	6	.....
Boston	3	.....
Fitchburg	5	.....
Nantucket	2	*
Michigan.		
Alpena	6	7.0
Cadillac	14	.....
Calumet	27	.....
Detroit	3	10.0
Escanaba	9	24.0
Grand Haven	3	.....
Michigan—Cont'd.		
Grand Rapids	5	.....
Houghton	17	15.0
Ironwood	14	.....
Lansing	4	.....
Ludington	7	.....
Mancelona	30	.....
Marquette	15	9.0
Port Huron	5	18.0
Saginaw	4	10.0
Sault Ste. Marie	12	18.0
Minnesota.		
Duluth	8	29.0
Leech Lake Dam	10	.....
Mankato	14	.....
Minneapolis	13	.....
Moorhead	10	37.0
Roseau	18	.....
St. Paul	14	20.0
Missouri.		
Hannibal	.....	*‡
St. Joseph	.....	‡
Montana.		
Billings	5	.....
Findon	24	.....
Glacier Park	34	.....
Havre	7	.....
Helena	2	.....
Miles City	8	.....
Red Lodge	19	.....
Nebraska.		
North Platte	T.	.....
Omaha	T.	⁂
O'Neill	2	.....
Valentine	T.	.....
Nevada.		
Austin	7	.....
Reno	T.	.....
Tonopah	T.	.....
Winnemucca	2	.....
New Hampshire.		
Bethlehem	13	.....
Concord	10	18.0
Durham	4	.....
Hanover	12	.....
New Jersey.		
Newton	2	.....
Phillipsburg	1	.....
Trenton	T.	†
New York.		
Albany	3	10.0
Binghamton	1	.....
Buffalo	9	12.0
Canton	17	.....
Cazenovia	11	.....
Herkimer	7	.....
Ithaca	T.	.....
Ogdensburg	26	.....
Oswego	11	3.0
Plattsburg	10	.....
Rochester	7	⁂
Syracuse	4	.....
North Dakota.		
Bismarck	15	29.0
Devils Lake	9	.....
Williston	3	28.5
Ohio.		
Canton	T.	.....
Cleveland	.....	8.5
Sandusky	.....	13.0
Ohio—Cont'd.		
Tiffin	T.	.....
Toledo	T.	10.0
Wauseon	3	.....
Oregon.		
Baker	8	.....
Hilgard	34	.....
Siskiyou	14	.....
Sparta	30	.....
Welches	14	.....
Pennsylvania.		
Allentown	1	.....
Drifton	2	.....
Erie	T.	8.0
Harrisburg	1	†
Hyndman	2	.....
Mifflintown	4	.....
Reading	T.	.....
Scranton	T.	.....
Stroudsburg	1	.....
Rhode Island.		
Block Island	1	.....
Kingston	2	.....
Narragansett Pier	2	.....
Providence	1	*
South Dakota.		
Huron	12	24.0
Pierre	4	28.0
Rapid City	1	.....
Yankton	2	22.0
Utah.		
Heber	20	.....
Logan	10	.....
Modena	7	.....
Salt Lake City	7	.....
Thistle	24	.....
Vermont.		
Brattleboro	9	17.5
Burlington	14	5.0
Northfield	19	.....
St. Johnsbury	14	.....
Washington.		
Cascade Tunnel	110	.....
Laurier	18	.....
North Head	T.	.....
Port Angeles	6	.....
Seattle	2	.....
Spokane	T.	.....
Stampede	76	.....
Tacoma	4	.....
Tatoosh Island	5	.....
Walla Walla	T.	.....
Wisconsin.		
Eau Claire	15	.....
Green Bay	8	11.0
La Crosse	11	23.0
Madison	3	.....
Medford	15	.....
Milwaukee	3	.....
Park Falls	11	.....
Wausau	12	13.5
Wyoming.		
Alta	37	.....
Dome Lake	36	.....
Fox Park	30	.....
Lander	5	.....
Sheridan	8	.....
South Pass City	11	.....
Yellowstone Park	22	.....

*Shore ice. †Floating ice. ‡Ice gorged. ⁂Measurement impracticable. T. indicates trace.

No. 10. Winter 1916-17.

U. S. DEPARTMENT OF AGRICULTURE,
WEATHER BUREAU.
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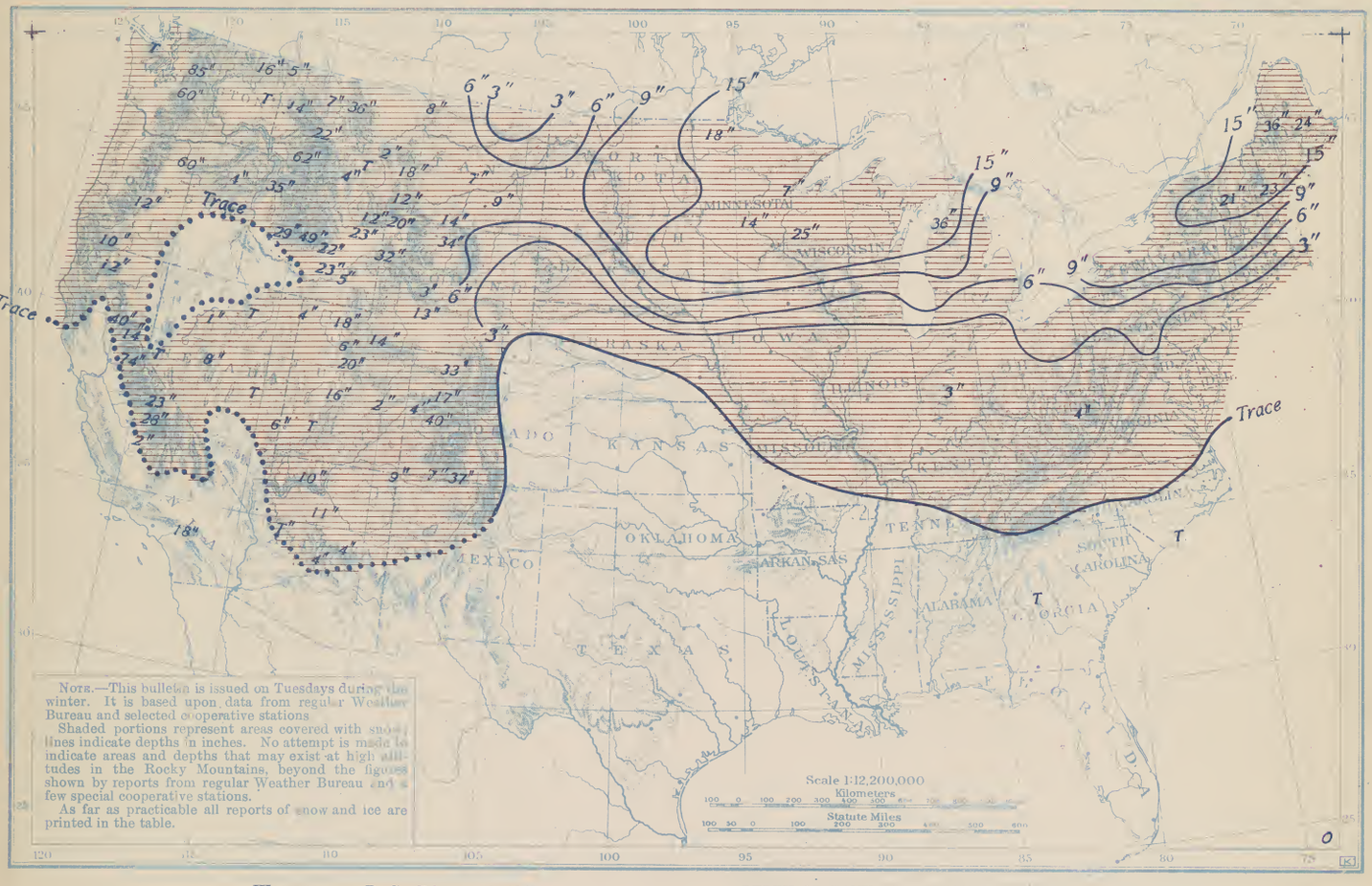
SNOW AND ICE BULLETIN.


Trace
Trace
Trace
Trace
Scale 1:12,200,000
Kilometers
Statute Miles
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Shaded portions represent areas covered with snow; lines indicate depths in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond the figures shown by reports from regular Weather Bureau and a few special cooperative stations.
As far as practicable all reports of snow and ice are printed in the table.

WASHINGTON, D. C., *February 6, 1917.*

GENERAL SUMMARY OF THE WEATHER DURING THE PAST WEEK.

The past week has been one of marked and rapid changes in temperature conditions, cold and fair weather prevailing, however, over most districts.

The low-pressure area, attended by snow and rain, in the far Northwest, at the beginning of the week, moved rapidly to the central valleys by Wednesday morning, but without material precipitation save to the northward of the center, where light snow occurred. During the following 24 hours it moved to the Middle Atlantic States, and precipitation, mostly light, prevailed over most districts from the Mississippi Valley eastward to the Atlantic coast. Over northern districts the precipitation was mostly in the form of snow, but to the southward of the center rain was general. This storm moved to New England and the Canadian Maritime Provinces by Friday morning, and was followed closely by a severe cold wave, the temperature changes in 24 hours ranging from 20° to 60° in portions of the central valleys.

This cold wave rapidly covered the southern and eastern districts, with temperatures below freezing over the entire Gulf and south Atlantic coast districts, and extended to nearly all portions of the Florida Peninsula, a minimum of 28° occurring at Miami, the lowest on record at that point.

A marked rise in temperature set in over the Great Plains districts by Saturday morning, changes during the 24 hours preceding amounting to from 30° to 50° or more at points in Nebraska and adjacent States. This change to warmer was but temporary, however, and another cold wave overspread the Northwest, moving rapidly southward and eastward, and by Monday morning severe cold prevailed in all districts to eastward of the Rocky Mountains, except southern Florida and New England. Immediately preceding this cold wave a disturbance moved rapidly from the Lake region eastward, and at 8 a. m. Monday was central over southern New England as a severe storm, attended by gales along the north Atlantic coast, and by high westerly winds and drifting snow over nearly all northern districts from the Missouri Valley eastward.

At this writing the storm has moved to the northeastward, accompanied by heavy snows in portions of New York and New England, and cold weather has extended to all eastern districts, with killing frosts over Florida as far south as Miami. Fair and cold weather now prevails in nearly all portions of the country, although there has been a considerable warming up in the Northwest.

DEPTH OF SNOW.

There was considerable increase in the depth of the snow cover during the week in portions of New York and New England, and locally in the Lake region and upper Mississippi Valley, elsewhere to eastward of the Rocky Mountains there was no material increase, except that a light covering now appears over most of the Ohio Valley and the southern Appalachian region which were free of snow at the beginning of the week.

The winter wheat region continues largely bare of any beneficial cover and the severe cold of the past week has doubtless caused material injury to the crop.

In the western mountain districts there was some reduction in the depth of snow at the lower levels, especially in Arizona and Washington, and increases are noted at a few points only. The continued snow cover has necessitated additional feeding over large areas, and some loss to stock, due to the severe cold, is reported.

ICE IN RIVERS AND HARBORS.

On account of the general and persistent cold during the past week the amount of ice on the rivers and lakes of all northern and central districts has increased materially, and harvest is now possible in practically all districts where ice is usually gathered.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., FEBRUARY 5, 1917.

Stations.	Snow.	Ice in rivers, harbors, etc.
Arizona.	*Inches*	*Inches*
Flagstaff	11	.....
Grand Canyon	10	.....
Prescott	T.	.....
California.		
Huntington Lake	28	.....
McCloud	12	.....
Summit	74	.....
Table Rock	44	.....
Colorado.		
Crested Butte	40	.....
Durango	7	.....
Grand Junction	4	.....
Leadville	17	.....
Steamboat Springs	33	.....
Connecticut.		
Hartford	9	*
New Haven	4	.....
Delaware.		
Wilmington	T.	.....
Dist. of Columbia.		
Washington	T.	3.0
Georgia.		
Atlanta	T.	.....
Idaho.		
Hailey	23	.....
McCall	35	.....
Oxford Ranger Sta.	62	.....
Pocatello	5	.....
Soldier Creek	86	.....
Illinois.		
Cairo	T.	†
Chicago	1	.....
Peoria	1	6.5
Springfield	1	.....
Indiana.		
Evansville	T.	.....
Fort Wayne	1	.....
Indianapolis	3	.....
La Fayette	4	.....
Terre Haute	T.	1.0
Valparaiso	4	.....
Iowa.		
Charles City	6	.....
Davenport	1	19.0
Des Moines	2	21.0
Dubuque	2	21.5
Keokuk	1	13.0
Sioux City	7	24.0
Kansas.		
Iola	.....	4.5
Kentucky.		
Beattyville	2	.....
Lexington	2	.....
Louisville	T.	.....
Maine.		
Bangor	18	24.0
Eastport	18	.....
Gardiner	10	19.0
Greenville	36	28.0
Lewiston	10	19.0
Portland	24	.....
Maryland.		
Baltimore	T.	.....
Oakland	1	.....
Massachusetts.		
Boston	6	.....
Fitchburg	16	.....
Holyoke	16	.....
Nantucket	2	*
Michigan.		
Alpena	7	*†
Calumet	27	.....

Stations.	Snow.	Ice in rivers, harbors, etc.
Michigan—Contd.	*Inches*	*Inches*
Detroit	2	12.0
Escanaba	9	26.0
Grand Haven	8	.....
Houghton	14	15.5
Lansing	4	.....
Ludington	10	.....
Mancelona	36	.....
Marquette	15	12.0
Port Huron	6	15.0
Saginaw	5	12.0
Sault Ste. Marie	17	19.0
Minnesota.		
Duluth	7	32.0
Minneapolis	15	.....
Moorhead	12	39.0
St. Paul	18	22.0
Missouri.		
Columbia	T.	.....
Hannibal	T.	*†
Kansas City	T.	*
St. Joseph	T.	‡
St. Louis	T.	*
Montana.		
Billings	T.	.....
Bozeman	12	.....
Findon	18	.....
Glacier Park	36	.....
Haugan	22	.....
Havre	8	.....
Helena	T.	.....
Kalispell	7	.....
Miles City	9	.....
Red Lodge	14	.....
Nebraska.		
Lincoln	T.	.....
North Platte	T.	.....
Omaha	1	⁂
Valentine	T.	.....
Nevada.		
Austin	8	.....
Reno	T.	.....
Tonopah	T.	.....
Winnemucca	1	.....
New Hampshire.		
Concord	12	19.0
W. Stewartstown	27	.....
New Jersey.		
Atlantic City	T.	.....
Cape May	T.	3.5
Newton	4	.....
Sandy Hook	3	†
Trenton	T.	5.0
New York.		
Albany	7	12.0
Binghamton	3	.....
Buffalo	12	15.0
Canton	9	.....
Ithaca	T.	.....
New York	2	.....
Ogdensburg	18	.....
Oswego	13	5.0
Plattsburg	12	.....
Rochester	11	6.0
Syracuse	8	.....
North Carolina.		
Asheville	1	*
Raleigh	T.	.....
Wilmington	T.	.....
North Dakota.		
Bismarck	14	32.0
Devils Lake	10	.....
Williston	4	25.5

Stations.	Snow.	Ice in rivers, harbors, etc.
Ohio.	*Inches*	*Inches*
Canton	4	.....
Cincinnati	1	.....
Cleveland	5	9.0
Columbus	2	.....
Dayton	2	3.0
Sandusky	4	14.0
Toledo	2	12.0
Oregon.		
Baker	4	.....
Siskiyou	10	.....
Pennsylvania.		
Erie	4	18.0
Harrisburg	T.	‡
Philadelphia	1	†
Pittsburgh	1	1.0
Reading	1	.....
Scranton	5	.....
Williamsport	4	.....
Rhode Island.		
Block Island	1	*
Kingston	2	.....
Narragansett Pier	3	.....
Providence	4	*
South Dakota.		
Huron	17	25.0
Pierre	6	26.0
Rapid City	T.	.....
Yankton	10	24.0
Tennessee.		
Chattanooga	1	.....
Nashville	T.	.....
Utah.		
Heber	20	.....
Logan	18	.....
Modena	6	.....
Salt Lake City	6	.....
Vermont.		
Brattleboro	13	19.5
Burlington	12	9.0
Northfield	21	.....
St. Johnsbury	17	.....
Virginia.		
Fredericksburg	2	.....
Lynchburg	T.	*
Richmond	T.	.....
Washington.		
Cascade Tunnel	85	.....
Laurier	16	.....
Port Angeles	T.	.....
Spokane	T.	.....
Stampede	60	.....
West Virginia.		
Charleston	4	.....
Elkins	2	.....
Parkersburg	1	†
Wisconsin.		
Barron	25	.....
Grand Rapids	25	.....
Green Bay	16	12.0
La Crosse	16	23.0
Madison	4	.....
Milwaukee	4	.....
Wausau	15	17.0
Wyoming.		
Alta	32	.....
Buffalo	5	.....
Dome Lake	34	.....
Evanston	14	.....
Lander	3	.....
Sheridan	2	.....
South Pass City	13	.....
Yellowstone Park	20	.....

*Shore ice. †Floating ice. ‡Ice gorged. ⁂Measurement impracticable. T. indicates trace.

No. 11. Winter 1916-17.

U. S. DEPARTMENT OF AGRICULTURE.
WEATHER BUREAU.
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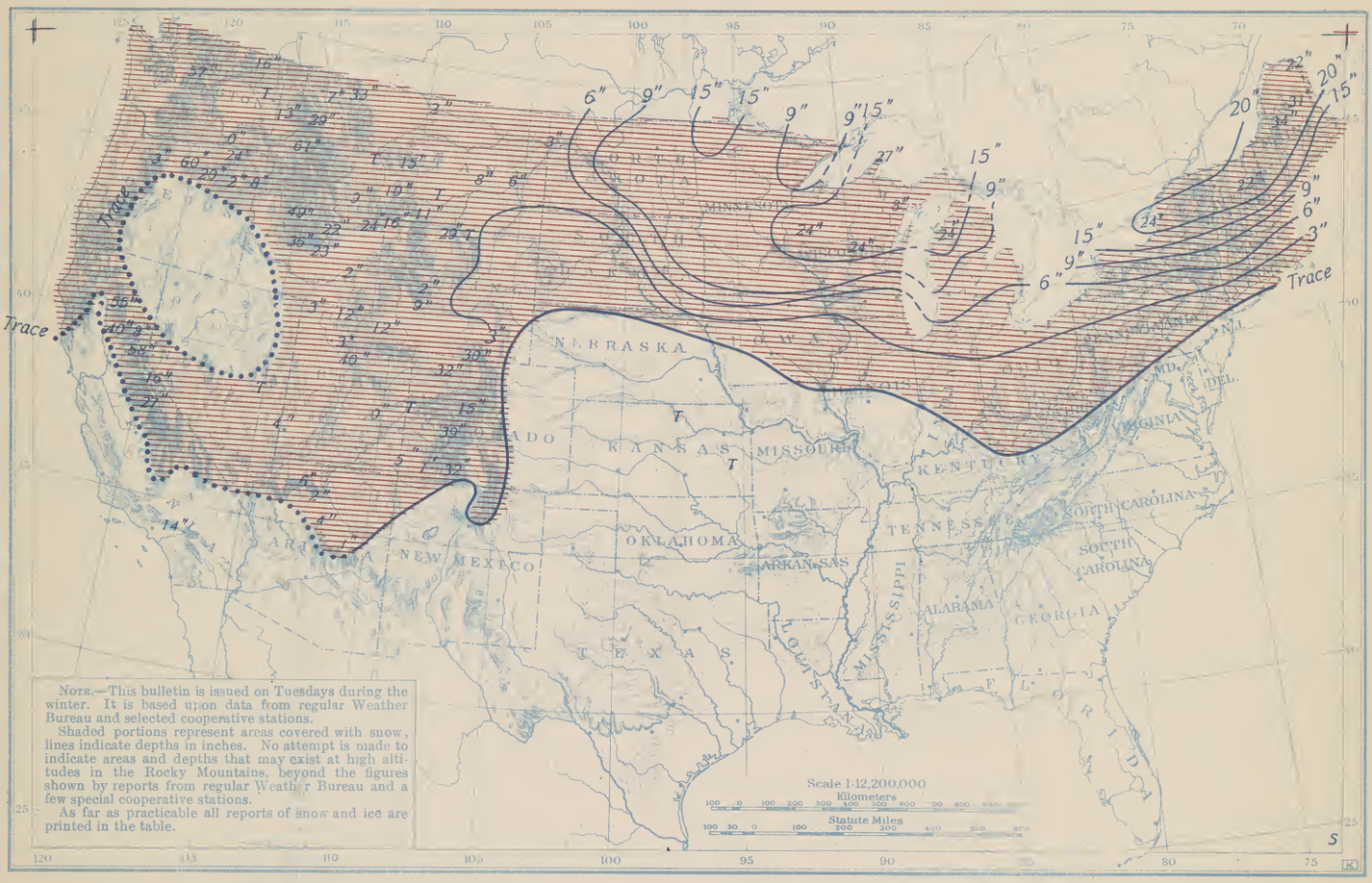
SNOW AND ICE BULLETIN.



NOTE.—This bulletin is issued on Tuesdays during the winter. It is based upon data from regular Weather Bureau and selected cooperative stations.

Shaded portions represent areas covered with snow, lines indicate depths in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond the figures shown by reports from regular Weather Bureau and a few special cooperative stations.

As far as practicable all reports of snow and ice are printed in the table.

WASHINGTON, D. C., *February 13, 1917.*

GENERAL SUMMARY OF THE WEATHER DURING THE PAST WEEK.

The persistent continuation of unusual cold over the greater part of the country was the marked feature of the weather during the week just closed. No extensive precipitation occurred during the week, except toward the latter part, when a storm of considerable severity moved from the Lake region to the middle Atlantic coast and New England. On Friday morning the storm was central over eastern Pennsylvania, attended by rains along the immediate Atlantic coast and over the Southeastern States, while light snow was general over the Lake region and Ohio Valley, and thence northeastward to New England. By Saturday morning the storm had moved to the St. Lawrence Valley, attended by gales along the coast and high winds inland, and by considerable snow over portions of New York and New England.

Near the end of the week rains set in over the Pacific Coast States, but elsewhere only light and local precipitation occurred.

At this writing unusual cold prevails over the Atlantic Coast States, but there has been a considerable moderation in other districts to eastward of the Rocky Mountains, while in the far West cold weather continues. Light snow is falling locally in the Rocky Mountains and Lake region and light rain has set in over Texas. Cloudy weather prevails in the Central Valleys and Southwest, but elsewhere it is generally clear.

DEPTH OF SNOW.

Over small areas from the Lake region to New England there was a small increase in the snow depths over those reported last week, but elsewhere throughout the country where there was snow last week the depths are now very generally less. This decrease is quite marked in the mountains of Colorado, Arizona, and California, where it amounted to from 5 to 15 inches, despite the persistent cold. Considerable decreases are also noted in the lower Missouri Valley. The area now snow covered is slightly less than at the same time last week and considerably less than existed a year ago.

Over the winter grain-growing regions the crops were very generally exposed to the severe cold of the past week without material snow cover, and have no doubt suffered some injury. However, the cold was fairly continuous and little thawing was probably experienced.

The continued snow cover over the western cattle raising districts prevented range pasture and necessitated additional feeding of stock.

No increase appears in the amount of snow stored in the high mountains of the West during the week; in fact, there has been little snow in any portion of the western Mountain districts for several weeks, and in the more southern districts and over portions of the Sierra Nevada there appears to have been little snow since the beginning of the year.

ICE IN RIVERS AND HARBORS.

Due to continued cold, increases in the amount of ice on the rivers and lakes were reported from practically all districts where it had previously formed.

Heavy ice now covers all northern streams, the thickness exceeding 3 feet in some localities. The harbors of the Lake region are covered with ice ranging from 8 to 36 inches in thickness, and the streams of the Atlantic coast from the Potomac northward are now generally ice-bound, except in their lower courses. The weather during the past week was favorable for cutting and storing ice, and it is probable an abundant supply has now been secured.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., FEBRUARY 12, 1917.

Stations.	Snow.	Ice in rivers, harbors, etc.
Arizona.	*Inches*	*Inches*
Flagstaff	4	.....
Grand Canyon	6	.....
Pinetop	1	.....
Williams	2	.....
California.		
Huntington Lake	27	.....
Inskip	35	.....
Summit	58	.....
Table Rock	40	.....
Yosemite	16	.....
Colorado.		
Crested Butte	39	.....
Cumbres	32	.....
Durango	1	.....
Grand Junction	T.	.....
Leadville	15	.....
Steamboat Springs	32	.....
Connecticut.		
Hartford	5	5.0
New Haven	T.	.....
Dist. of Columbia.		
Washington	.....	6.0
Idaho.		
Boise	T.	.....
Hailey	28	.....
Oxford Ranger Sta.	61	.....
Pocatello	2	.....
Soldier Creek	36	.....
Spencer	24	.....
Vienna	49	.....
Illinois.		
Cairo	.....	*†
Chicago	1	.....
Peoria	T.	7.0
Pontiac	3	.....
Indiana.		
Evansville	.....	†
Fort Wayne	1	.....
Indianapolis	2	.....
La Fayette	3	.....
Marion	2	.....
Terre Haute	.....	4.0
Valparaiso	3	.....
Iowa.		
Charles City	3	.....
Davenport	T.	21.0
Des Moines	T.	21.5
Dubuque	2	22.5
Estherville	10	.....
Keokuk	.....	13.0
Mason City	6	.....
Sioux City	3	24.0
Kansas.		
Concordia	T.	.....
Iola	T.	4.0
Kentucky.		
Lexington	T.	.....
Louisville	T.	.....
Mount Sterling	2	.....
Maine.		
Bangor	13	24.0
Eastport	10	.....
Gardiner	21	21.0
Greenville	34	28.0
Lewiston	16	19.0
Portland	22	.....
Massachusetts.		
Adams	8	.....
Boston	1	.....
Fitchburg	17	.....
Nantucket	.....	2.0
Michigan.		
Alpena	6	10.5
Cadillac	15	.....
Calumet	27	.....
Detroit	4	14.0
Escanaba	8	28.0
Grand Haven	9	.....
Grand Rapids	5	.....
Houghton	13	16.0
Lansing	4	.....
Ludington	8	.....
Manistee	24	.....
Marquette	15	14.0
Port Huron	6	16.0
Saginaw	6	18.0
Sault Ste. Marie	15	21.0
Minnesota.		
Collegeville	12	.....
Duluth	5	36.0
Leech Lake Dam	10	.....
Minneapolis	14	.....
Moorhead	10	40.0
St. Paul	16	28.0
Thief River Falls	19	.....
Missouri.		
Hannibal	.....	*†
Kansas City	.....	*
St. Joseph	.....	‡
St. Louis	.....	†
Unionville	T.	.....
Montana.		
Billings	T.	.....
Findon	15	.....
Glacier Park	33	.....
Haugan	29	.....
Havre	2	.....
Helena	T.	.....
Kalispell	7	.....
Miles City	6	.....
Nebraska.		
Omaha	.....	§
Valentine	T.	.....
Nevada.		
McGill	T.	.....
Tonopah	T.	.....
New Hampshire.		
Bethlehem	23	.....
Concord	12	19.0
W. Stewartstown	31	.....
New Jersey.		
Cape May	.....	5.0
Newton	T.	.....
Sandy Hook	.....	†‡
Trenton	.....	7.0
New York.		
Albany	9	13.0
Binghamton	2	.....
Buffalo	17	16.0
Canton	16	.....
Cazenovia	19	.....
De Ruyter	14	.....
Herkimer	14	.....
Ithaca	2	.....
Ogdensburg	28	.....
Oswego	24	6.0
Rochester	12	8.0
Syracuse	11	.....
North Dakota.		
Bismarck	12	33.5
Devils Lake	9	.....
Williston	3	28.0
Ohio.		
Cincinnati	T.	†
Cleveland	3	12.0
Columbus	1	.....
Dayton	T.	3.5
Marion	4	.....
Sandusky	4	18.0
Tiffin	5	.....
Toledo	3	13.0
Wapakoneta	4	.....
Oregon.		
Baker	2	.....
Condon	20	.....
Detroit	8	.....
Gov't Camp	60	.....
Hilgard	24	.....
Sparta	8	.....
Pennsylvania.		
Drifton	2	.....
Erie	5	18.0
Harrisburg	T.	‡
Pittsburgh	1	*
Reading	T.	.....
Scranton	T.	.....
Williamsport	3	.....
Rhode Island.		
Block Island	.....	*
Narragansett Pier	T.	.....
Providence	T.	2.5
South Dakota.		
Huron	9	26.0
Pierre	2	27.5
Rapid City	1	.....
Yankton	4	25.0
Utah.		
Heber	20	.....
Kelton	3	.....
Logan	12	.....
Modena	4	.....
Salt Lake City	3	.....
Vermont.		
Brattleboro	12	22.0
Burlington	14	12.5
Northfield	22	.....
St. Johnsbury	19	.....
Virginia.		
Lynchburg	.....	†
Washington.		
Laurier	16	.....
Spokane	T.	.....
Stampede	57	.....
West Virginia.		
Charleston	T.	.....
Parkersburg	1	†
Wisconsin.		
Barron	24	.....
Grand Rapids	24	.....
Green Bay	15	12.5
La Crosse	12	24.0
Madison	4	.....
Medford	18	.....
Milwaukee	3	.....
Park Falls	12	.....
Wausau	13	18.5
Wyoming.		
Dome Lake	29	.....
Evanston	12	.....
Fox Park	30	.....
Lander	2	.....
Sheridan	T.	.....
South Pass City	9	.....
Yellowstone Park	16	.....

*Shore ice. †Floating ice. ‡Ice gorged. §Measurement impracticable. T. indicates trace.

No. 12. Winter 1916-17.

U. S. DEPARTMENT OF AGRICULTURE,
WEATHER BUREAU.
CHARLES F. MARVIN, CHIEF.

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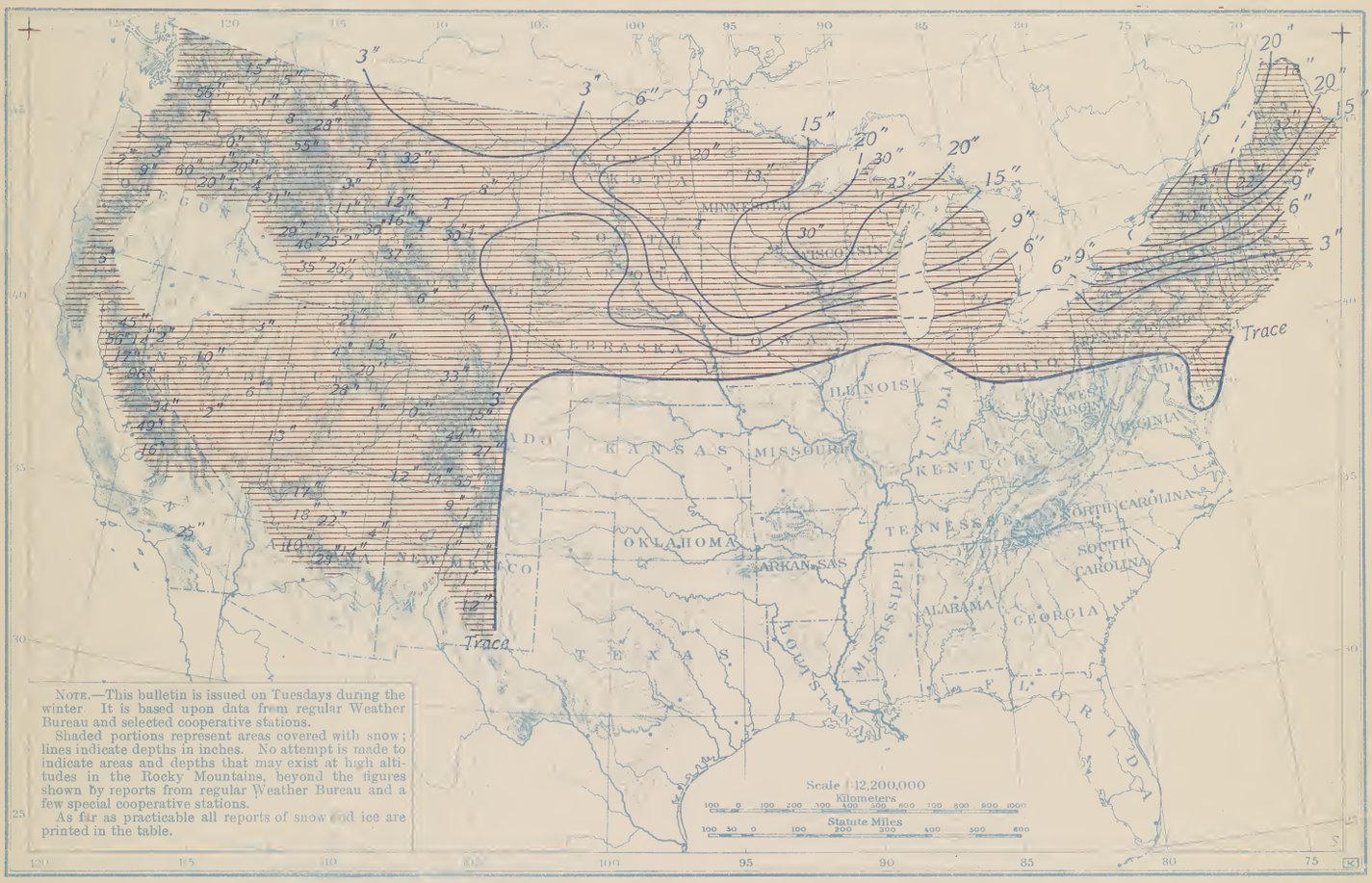
SNOW AND ICE BULLETIN.



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Shaded portions represent areas covered with snow; lines indicate depths in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond the figures shown by reports from regular Weather Bureau and a few special cooperative stations.

As far as practicable all reports of snow and ice are printed in the table.

WASHINGTON, D. C., *February 20, 1917.*

GENERAL SUMMARY OF THE WEATHER DURING THE PAST WEEK.

A very general warming up in nearly all parts of the country and more or less precipitation over wide areas were the important features of the weather during the week just closed. A storm that developed in the Southwest early in the week moved eastward over Texas to the lower Mississippi Valley and thence northeastward to the middle Atlantic coast by the 15th, and was attended by moderate to heavy rains, with some snow over the more northern portions of the storm area.

By Saturday morning storms of considerable intensity had developed in the Lake region and in the far Southwest, and light rains or snows had overspread large areas along the northern border and from the Rocky Mountains westward.

The storm over the Lake region dissipated rapidly, and that from the Southwest moved eastward to the middle Mississippi Valley by Monday morning, but without material precipitation over the Plains States. However, rains had extended eastward over the Ohio Valley and Southeastern States and snow was falling in the lower Missouri and upper Mississippi Valleys. At the same time a storm was advancing into the far Northwest, causing rains on the north Pacific coast and snows in the Plateau region.

At this writing the storm in the central valleys has moved to the northeastward, and rain or snow has been general in nearly all districts to eastward of the Mississippi River. The storm in the far Northwest has moved eastward to the Plateau region, and rain or snow has prevailed during the past 24 hours in practically all districts to westward of the Rocky Mountains.

DEPTH OF SNOW.

In the districts from the lower Lake region and Ohio Valley northeastward to New England there was a material reduction in the snow depth during the week, but no important change occurred in the extent of the snow covered area. From the upper Lakes westward to the mountains the depth of snow increased slightly during the week, but there was but little change in the area covered. In the mountain regions of the West the storms of the latter part of the week added materially to the depths at the high elevations, particularly in California and portions of Arizona, Utah, and Colorado, where in some cases the newly fallen snow reached depths of from 2 to 3 feet.

The ground continues heavily covered in the interior of New England and in northern New York, in the upper Lake region, and thence westward to the Dakotas, and much snow has accumulated in the mountains from Colorado northward, and in the far Northwest.

The greater part of the winter grain area has continued without material covering, and the crop has been exposed to frequent freezing and thawing. But little moisture has been received in the Southwest, where dry weather has prevailed for a considerable period, and the grain crops have doubtless suffered further injury.

Continued snow covering in the western mountain regions has necessitated further feeding of stock, but doubtless some relief was afforded by the change to warmer weather.

The prospective water supply from the snow in the western mountain districts continues good in most central and northern districts, where large bodies of well packed snow have accumulated, indicating a constant and long-continued flow. In portions of California and the Southwest the supply of snow is apparently less than the average, despite the comparatively large falls during the week just closed, and the outlook for water is less promising.

ICE IN RIVERS AND HARBORS.

Small increases in the ice thickness occurred over all northern districts, but elsewhere there was but little change, save for slight melting in the more southern districts.

All northern streams and lakes continue heavily ice-bound, and similar conditions prevail over the headwaters of the Ohio and the rivers of the Atlantic coast from the Potomac northward.

The weather of the past week continued favorable for the ice harvest, and a full crop has now been safely stored.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., FEBRUARY 19, 1917.

Stations.	Snow.	Ice in rivers, harbors, etc.
Arizona.	*Inches*	*Inches*
Carrs Ranch	28	.....
Flagstaff	22	.....
Grand Canyon	17	.....
Prescott	10	.....
California.		
Huntington Lake	49	.....
Inskip	45	.....
Squirrel Inn	25	.....
Summit	96	.....
Table Rock	56	.....
Yosemite	34	.....
Colorado.		
Crested Butte	44	.....
Cumbres	65	.....
Denver	1	.....
Durango	14	.....
Leadville	15	.....
Marshall Pass	27	.....
Steamboat Springs	33	.....
Connecticut.		
Hartford	1	5.0
New Haven	T.	.....
Dist. of Columbia.		
Washington	.....	6.0
Idaho.		
Hailey	26	.....
Idaho City	29	.....
McCall	31	.....
Oxford Ranger Sta.	55	.....
Soldier Creek	35	.....
Vienna	46	.....
Illinois.		
Cairo	.....	†
Chicago	T.	.....
Peoria	.....	6.0
Indiana.		
Terre Haute	.....	3.5
Iowa.		
Carroll	5	.....
Charles City	10	.....
Davenport	T.	21.5
Des Moines	T.	⅔
Dubuque	2	24.0
Keokuk	.....	11.0
New Hampton	9	.....
Pocahontas	9	.....
Sioux City	4	26.0
Maine.		
Bangor	12	25.0
Eastport	10	.....
Gardiner	20	23.0
Greenville	32	28.0
Lewiston	12	21.0
Portland	19	.....
Van Buren	18	.....
Massachusetts.		
Adams	6	.....
Boston	T.	.....
Fitchburg	11	.....
Holyoke	10	.....
Mansfield	6	.....
Nantucket	T.	4.0
Michigan.		
Alpena	8	12.5
Cadillac	10	.....
Calumet	30	.....
Chatham	20	.....
Detroit	3	14.0
Escanaba	11	28.5
Grand Haven	6	.....
Grand Rapids	2	.....

Stations.	Snow.	Ice in rivers, harbors, etc.
Michigan—Contd.	*Inches*	*Inches*
Houghton	17	18.0
Ironwood	18	.....
Lansing	3	.....
Ludington	11	.....
Manistee	17	.....
Marquette	23	17.0
Port Huron	4	18.0
Sault Ste. Marie	16	25.0
Minnesota.		
Duluth	8	36.0
Fort Ripley	18	.....
Leech Lake Dam	13	.....
Mankato	15	.....
Minneapolis	16	.....
Moorhead	10	41.0
St. Paul	17	30.0
Thief River Falls	20	.....
Missouri.		
Hannibal	.....	*†
Kansas City	.....	†
St. Joseph	.....	‡
Montana.		
Bozeman	12	.....
Findon	32	.....
Haugan	28	.....
Havre	T.	.....
Helena	T.	.....
Kalispell	4	.....
Virginia City	11	.....
Nebraska.		
Lincoln	T.	.....
North Platte	1	.....
Omaha	T.	⅔
Valentine	3	.....
Nevada.		
Austin	10	.....
Elko	3	.....
McGill	6	.....
Reno	2	.....
Tonopah	2	.....
New Hampshire.		
Bethlehem	22	.....
Concord	10	20.0
Durham	6	.....
Hanover	12	.....
Keene	9	.....
W. Stewartstown	26	.....
New Jersey.		
Cape May	.....	3.5
Sandy Hook	T.	‡
Trenton	.....	7.0
New Mexico.		
Cloudcroft	12	.....
Corona	1	.....
Las Vegas	1	.....
Santa Fe	T.	.....
Taos	1	.....
Tres Piedras	9	.....
New York.		
Albany	5	15.0
Binghamton	T.	.....
Buffalo	14	16.0
Canton	10	.....
Cazenovia	15	.....
De Ruyter	10	.....
Herkimer	12	.....
Ithaca	T.	.....
Ogdensburg	15	.....
Oswego	18	7.0
Plattsburg	15	.....
Rochester	7	⅔

Stations.	Snow.	Ice in rivers, harbors, etc.
New York—Contd.	*Inches*	*Inches*
Rome	15	.....
Syracuse	6	.....
Watertown	8	.....
North Dakota.		
Bismarck	10	33.0
Devils Lake	6	.....
Williston	1	29.5
Ohio.		
Cleveland	.....	12.5
Sandusky	.....	18.0
Toledo	T.	13.5
Oregon.		
Condon	20	.....
Detroit	9	.....
Gov't Camp	60	.....
Hilgard	20	.....
Sparta	4	.....
Welches	3	.....
Pennsylvania.		
Drifton	2	.....
Erie	1	20.0
Harrisburg	T.	‡
Lawrenceville	2	.....
Reading	T.	.....
Scranton	T.	.....
Warren	5	.....
Rhode Island.		
Block Island	.....	*
Providence	T.	*
South Dakota.		
Pierre	1	28.0
Rapid City	1	.....
Yankton	2	22.0
Utah.		
Heber	20	.....
Logan	21	.....
Modena	13	.....
Salt Lake City	4	.....
Thistle	28	.....
Vermont.		
Brattleboro	12	22.0
Burlington	11	16.0
Northfield	19	.....
St. Johnsbury	18	.....
Washington.		
Laurier	15	.....
Spokane	1	.....
Stampede	56	.....
Tatoosh Island	T.	.....
West Virginia.		
Parkersburg	.....	†
Wisconsin.		
Barron	30	.....
Grand Rapids	24	.....
Green Bay	15	15.0
La Crosse	18	23.0
Madison	7	.....
Medford	19	.....
Milwaukee	3	.....
Park Falls	17	.....
Rhinelander	20	.....
Wausau	18	18.5
Wyoming.		
Alta	37	.....
Casper	4	.....
Cheyenne	3	.....
Dome Lake	30	.....
Evanston	13	.....
Lander	6	.....
Sheridan	1	.....
Yellowstone Park	16	.....

*Shore ice. †Floating ice. ‡Ice gorged. ⅔Measurement impracticable. T. indicates trace.

No. 13. Winter 1916-17.

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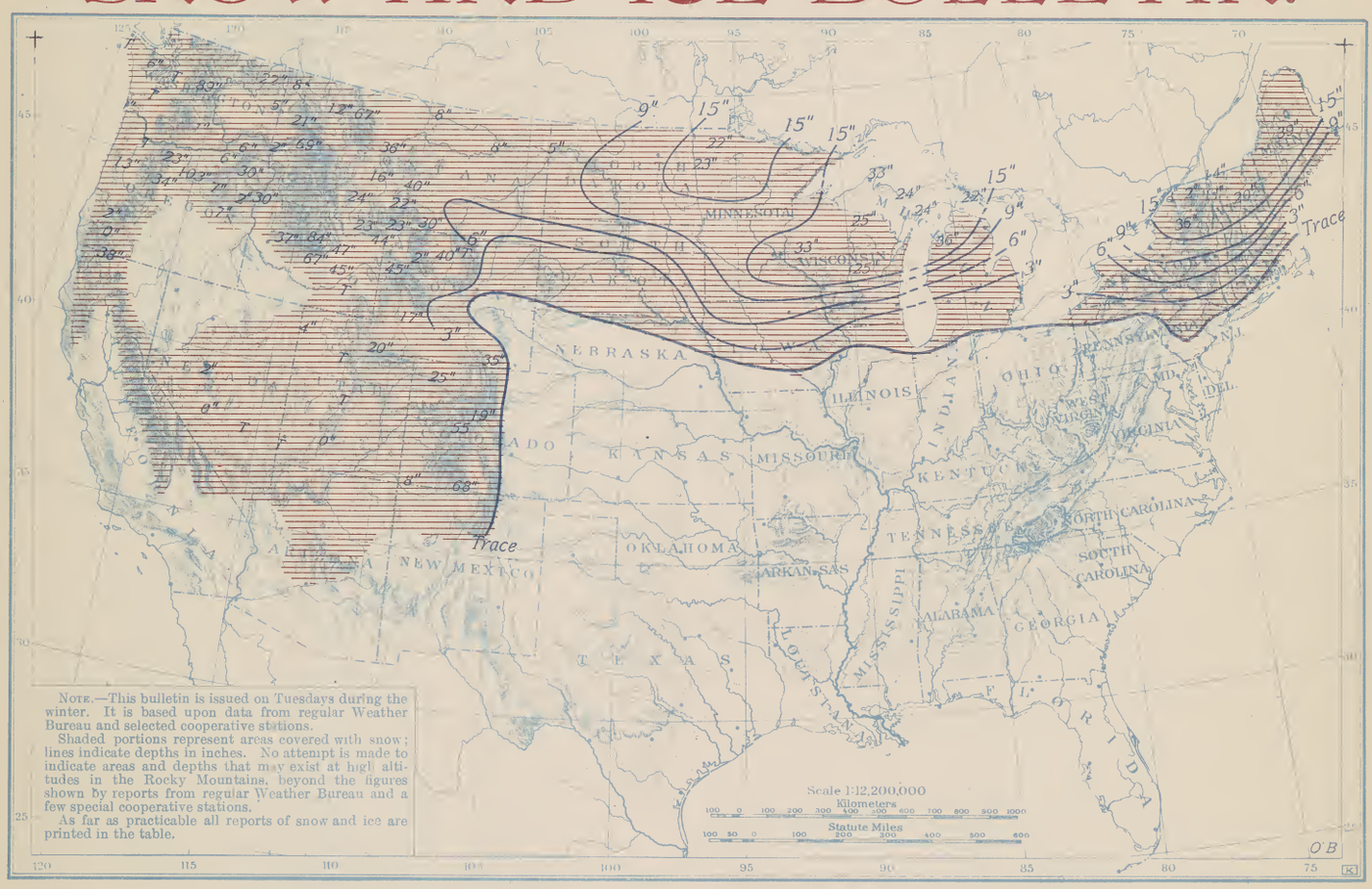
SNOW AND ICE BULLETIN.



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As far as practicable all reports of snow and ice are printed in the table.

WASHINGTON, D. C., *February 27, 1917.*

GENERAL SUMMARY OF THE WEATHER DURING THE PAST WEEK.

The stormy conditions in the far Northwest referred to in the last issue of this bulletin continued over that region for several days, resulting in more or less snow in the central and northern districts, and in considerable rain along the coast, particularly in California, where at some points near the coast the total fall ranged from one to three inches. During this period occasional light snows occurred along the northern border, and some rain was reported from the Atlantic coast districts, but elsewhere there was little precipitation. Later in the week light rains occurred over portions of the central valleys, and by Saturday morning they had extended into the Atlantic Coast States, becoming more general, and in some localities the fall was heavy. At that time rain had again set in on the Pacific Coast and snow was falling at local points in the adjacent mountain regions. During the following 24 hours rains continued along the coast, again becoming heavy in portions of California, while snow, mostly light, extended farther eastward over the mountain districts and along the extreme northern border.

Over all central and southern districts to eastward of the Rocky Mountains the latter part of the week was very generally without precipitation, and practically no rain or snow fell in the far Southwest.

At this writing light snow is falling at a few points in the Lake region and northeastern districts, but in practically all other portions of the country fair and moderate weather prevails.

DEPTH OF SNOW.

During the week just closed a considerable increase in the depth of the snow covering is reported over all northern districts from the upper Lakes westward to the Pacific Coast. In Idaho and portions of adjoining States this increase ranged from one to three feet, or more. Over the southern mountain regions, where heavy falls occurred during the preceding week, the melting during the week just closed was rapid and a large part of the covering at the lower levels has disappeared. There was some reduction in depth over the more southerly districts that were previously snow-covered, the loss along portions of the New England Coast amounting to a foot or more.

As a whole, the snow-covered area has not changed materially during the week, although changes in depth have been considerable over large areas.

Deep snow still covers the lower elevations of considerable areas in the western mountain districts and the feeding of stock is still necessary.

The previous good outlook for irrigation water for the coming growing season in the northern mountain States was materially improved by the large amounts of snow in those districts during the past week. In the more southern districts the outlook is less promising.

ICE IN RIVERS AND HARBORS.

Continued moderate winter weather caused the formation of some additional ice on the streams and lakes of the more northern districts, but there was a very general, though slight, reduction in the amount on the streams of the central portions of the country, while to the southward the ice is beginning to break up and move out to some extent. Ice approaching four feet in thickness is reported from Minnesota and North Dakota, and amounts only slightly less prevail in the upper Lake region and in the headwaters and tributaries of the upper Mississippi, while in New England and New York the ice ranges up to two feet or more in thickness. The ice over the western end of Lake Erie has diminished considerably during the past week and the Detroit River is open in places.

The ice harvest has probably been completed in most districts and a plentiful supply has been available at all points where provision is made for storage.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., FEBRUARY 26, 1917.

Stations.	Snow.	Ice in rivers, harbors, etc.
Arizona.	*Inches*	*Inches*
Carrs Ranch	12	.....
Flagstaff	1	.....
Grand Canyon	11	.....
Pinetop	4	.....
Williams	2	.....
Colorado.		
Crested Butte	55	.....
Cumbres	68	.....
Leadville	19	.....
Rico	8	.....
Steamboat Springs	25	.....
Connecticut.		
Hartford	T.	8.0
West Cornwall	7	.....
Dist. of Columbia.		
Washington	.....	†
Idaho.		
Hailey	45	.....
Ketchum	47	.....
Lewiston	2	.....
Oxford Ranger Sta.	69	.....
Pocatello	T.	.....
Soldier Creek	67	.....
Vienna	84	.....
Illinois.		
Chicago	T.	.....
Oregon	T.	.....
Peoria	.....	†
Iowa.		
Charles City	4	.....
Davenport	.....	21.0
Des Moines	.....	19.5
Dubuque	1	22.0
Estherville	5	.....
Forest City	6	.....
Mason City	6	.....
New Hampton	4	.....
Pocahontas	8	.....
Sioux City	1	25.0
Maine.		
Bangor	12	25.0
Eastport	7	.....
Gardiner	16	24.0
Greenville	39	28.0
Lewiston	6	20.0
Portland	6	.....
Massachusetts.		
Fitchburg	3	.....
Holyoke	7	.....
Mansfield	T.	.....
Michigan.		
Alpena	7	15.0
Battle Creek	T.	.....
Big Rapids	5	.....
Bloomingdale	7	.....
Calumet	33	.....
Chatham	24	.....
Escanaba	16	29.0
Grand Haven	2	.....
Grand Rapids	1	.....
Iron Mountain	19	.....
Ironwood	22	.....
Lansing	T.	.....
Mancelona	36	.....
Manistee	21	.....

Stations.	Snow.	Ice in rivers, harbors, etc.
Michigan—Contd.	*Inches*	*Inches*
Marquette	24	20.0
Newberry	19	.....
Port Huron	1	18.5
Saginaw	1	17.0
St. Ignace	18	.....
Sault Ste. Marie	22	26.0
Minnesota.		
Duluth	13	38.0
Grand Meadow	12	.....
Leech Lake Dam	20	.....
Minneapolis	17	.....
Montevideo	4	.....
Moorhead	14	42.0
Roseau	22	.....
St. Paul	19	30.0
Thief River Falls	23	.....
Missouri.		
Hannibal	.....	*†
Kansas City	.....	*
St. Joseph	.....	‡
Montana.		
Adel	36	.....
Billings	5	.....
Findon	40	.....
Glacier Park	67	.....
Glasgow	8	.....
Havre	8	.....
Helena	16	.....
Kalispell	12	.....
Miles City	7	.....
Red Lodge	30	.....
Nebraska.		
Omaha	.....	⁂
Valentine	T.	.....
Nevada.		
Austin	2	.....
Winnemucca	T.	.....
New Hampshire.		
Bethlehem	23	.....
Concord	10	21.0
Hanover	12	.....
Keene	6	.....
W. Stewartstown	27	.....
New Jersey.		
Trenton	.....	2.5
New York.		
Albany	T.	12.0
Angelica	T.	.....
Binghamton	T.	.....
Buffalo	4	16.0
Canton	8	.....
De Ruyter	10	.....
Lowville	36	.....
Malone	2	.....
Ogdensburg	18	.....
Oswego	12	7.0
Plattsburg	14	.....
Rochester	3	⁂
Rome	8	.....
Roxbury	9	.....
Syracuse	3	.....
North Dakota.		
Bismarck	14	34.0
Devils Lake	11	.....
Williston	5	30.0

Stations.	Snow.	Ice in rivers, harbors, etc.
Ohio.	*Inches*	*Inches*
Cleveland	.....	5.5
Sandusky	.....	9.0
Toledo	.....	7.0
Oregon.		
Baker	2	.....
Detroit	34	.....
Gov't Camp	103	.....
Hilgard	30	.....
Pendleton	6	.....
Portland	T.	.....
Prairie City	7	.....
Roseburg	2	.....
Siskiyou	38	.....
Sparta	30	.....
Welches	23	.....
Pennsylvania.		
Drifton	T.	.....
Harrisburg	.....	‡
Mifflintown	T.	.....
Reading	T.	.....
Warren	1	.....
South Dakota.		
Huron	2	27.0
Pierre	T.	29.0
Rapid City	T.	.....
Yankton	T.	22.0
Utah.		
Kelton	4	.....
Modena	T.	.....
Salt Lake City	T.	.....
Thistle	7	.....
Vermont.		
Brattleboro	9	22.0
Burlington	11	17.0
Northfield	20	.....
St. Johnsbury	18	.....
Washington.		
Cascade Tunnel	89	.....
Laurier	22	.....
North Head	1	.....
North Yakima	1	.....
Port Angeles	6	.....
Seattle	T.	.....
Spokane	5	.....
Tacoma	T.	.....
Tatoosh Island	T.	.....
Walla Walla	6	.....
Wisconsin.		
Barron	33	.....
Fond du Lac	12	.....
Grand Rapids	25	.....
Green Bay	15	15.0
Madison	3	.....
Medford	21	.....
Rhinelander	25	.....
Wausau	20	22.0
Wyoming.		
Alta	45	.....
Dome Lake	40	.....
Evanston	20	.....
Fox Park	35	.....
Lander	T.	.....
Sheridan	T.	.....
South Pass City	17	.....
Yellowstone Park	28	.....

NOTE.—California reports not received in time for printing.

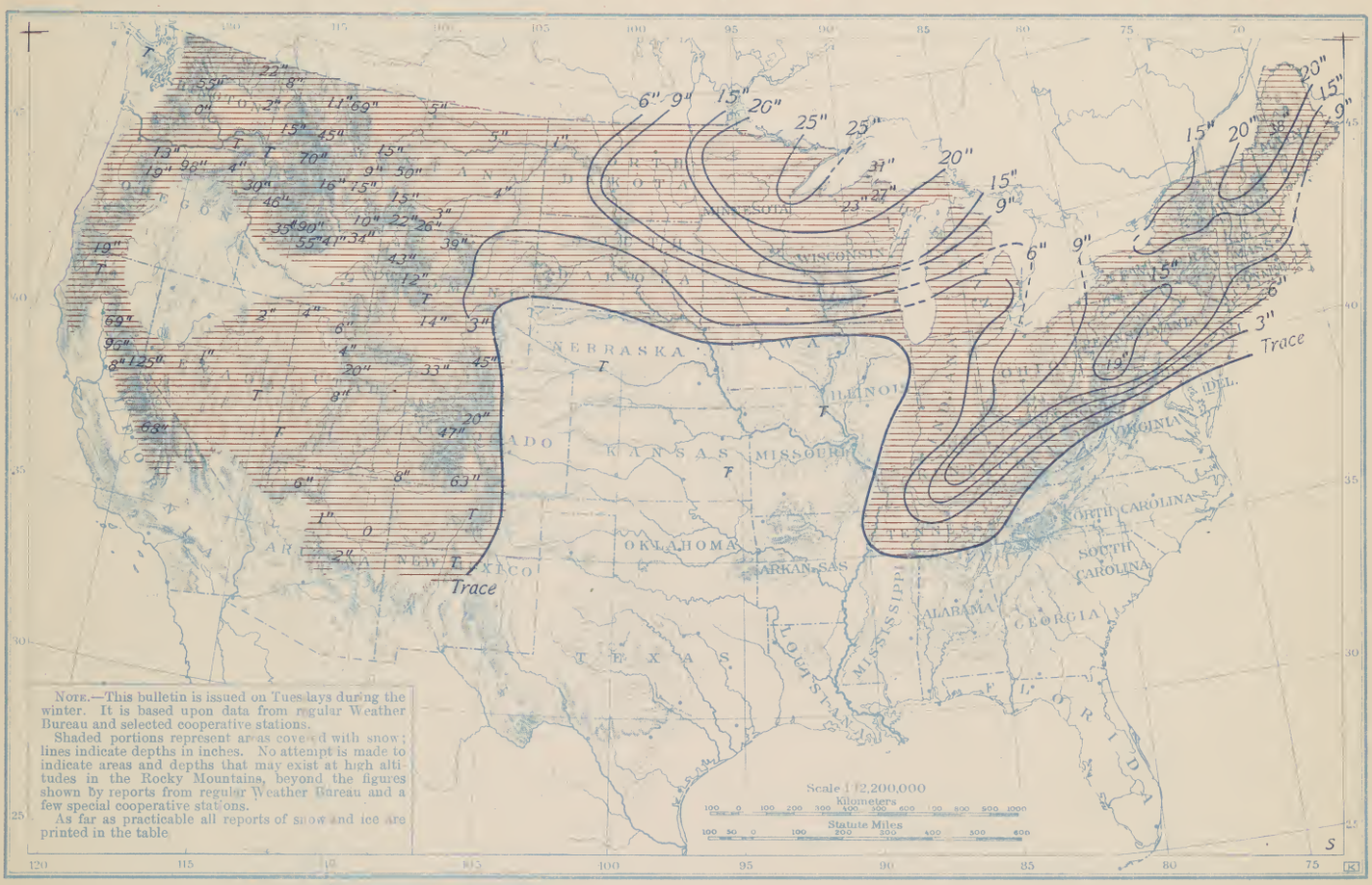
*Shore ice. †Floating ice. ‡Ice gorged. ⁂Measurement impracticable. T. indicates trace.

No. 14. Winter 1916-17.

MAR 8 1917

U. S. DEPARTMENT OF AGRICULTURE,
WEATHER BUREAU.
CHARLES F. MARVIN, CHIEF.

SNOW AND ICE BULLETIN.


Note.—This bulletin is issued on Tuesdays during the winter. It is based upon data from regular Weather Bureau and selected cooperative stations.
Shaded portions represent areas covered with snow; lines indicate depths in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond the figures shown by reports from regular Weather Bureau and a few special cooperative stations.
As far as practicable all reports of snow and ice are printed in the table
Trace
Scale 1:12,200,000
Kilometers
Statute Miles

WASHINGTON, D. C., *March 6, 1917.*

GENERAL SUMMARY OF THE WEATHER DURING THE PAST WEEK.

Generally fair and moderate winter weather continued during the early part of the week just ended, although rain and snow had set in over the Ohio Valley by Wednesday morning.

During the following 24 hours the area of precipitation extended somewhat and by Thursday morning rain was falling from southwestern Texas northeastward to the middle Atlantic coast. No material change occurred during the following 24 hours, although the rain area extended somewhat southward, and snow set in along the northern limits of the precipitation area. By Saturday morning, however, the precipitation area had increased considerably, and snow or rain was more or less prevalent over all central and southern districts to eastward of the Rocky Mountains. The rainfall in portions of the Ohio Valley and northern Gulf States during this period had been quite heavy and sharp rises were reported in the rivers of that region.

During Saturday night and Sunday the generally unsettled conditions developed into a storm of more pronounced intensity, which moved slowly northeastward to western North Carolina, and precipitation continued over large areas from the Mississippi Valley eastward. Snow prevailed from the Ohio Valley northeastward into southern New England, the falls being heavy in portions of Pennsylvania, New Jersey, eastern New York, and southern New England. Over portions of the South heavy rains continued and severe flood conditions were threatening in the rivers of that region. The storm center moved northeastward during Sunday night and Monday with considerable increase in intensity, heavy snows continuing from Pennsylvania northeastward to New England, and more or less rain persisting to the southward.

Over the western districts the week was very generally without material precipitation.

At this writing the storm has moved to the Canadian Maritime Provinces with greatly increased severity, but fair weather now prevails in nearly all districts to eastward of the Rocky Mountains. Light rain or snow is falling at a few points in the western mountain districts, but otherwise the weather is fair in the far West.

DEPTH OF SNOW.

As a result of heavy snows near the close of the week a considerable area in the Ohio Valley that was bare at the beginning of the week is now heavily covered, and from thence northeastward to southern New England the snow depths are from 6 inches to a foot or more in excess of those reported a week ago.

Over the remaining portions of the country the snow-covered area is not materially different from that of the preceding week, although the depths have been somewhat reduced, as a rule, particularly in the far Northwest.

Practically the entire winter grain area to eastward of the Rocky Mountains, except in the Ohio Valley and thence northeastward, is now bare. The ground continues snow-covered over large areas at the lower levels of the western mountain districts, and stock feeding probably continues necessary to a greater extent than usual at this period of the year.

ICE IN RIVERS AND HARBORS.

Moderately cool weather maintained the ice conditions over the northern portions of the country substantially as reported a week ago, but over the central districts warmer weather and rains reduced the thickness somewhat, especially on the streams of the Atlantic coast.

The following report on the ice conditions over the Great Lakes is furnished by the official in charge at Detroit, Mich.:

Heavy and extensive ice fields extend from Duluth along the south shore of Lake Superior to Whitefish Bay, with open water on north shore from Beaver Bay to Grand Marais. St. Marys River is covered solid, while in Green Bay the ice is heavy, and extensive fields cover northern Lake Michigan, and moving fields are reported over the southern portion. In the Straits of Mackinac the ice is 20 inches thick, and extensive fields cover Lake Huron. St. Clair River is open and ice is running out of Lake St. Clair and the Detroit River. Over Lake Erie the ice fields are heavy and extensive, but with little movement. The harbors of Lake Ontario are solid, but there are not many fields in the lake. There is considerably more and heavier ice in the Lake region than last season.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., MARCH 5, 1917.

Stations.	Snow.	Ice in rivers, harbors, etc.
Arizona.	*Inches*	*Inches*
Flagstaff	1	.....
Grand Canyon	6	.....
California.		
Huntington Lake	68	.....
Inskip	62	.....
Sierraville	8	.....
Summit	125	.....
Table Rock	96	.....
Colorado.		
Crested Butte	47	.....
Cumbres	68	.....
Denver	T.	.....
Leadville	20	.....
Steamboat Springs	33	.....
Connecticut.		
Hartford	5	6.0
New Haven	6	.....
Delaware.		
Wilmington	2	.....
Idaho.		
Boise	T.	.....
Idaho City	35	.....
Lewiston	T.	.....
Oxford Ranger Sta.	70	.....
Pocatello	T.	.....
Soldier Creek	55	.....
Vienna	90	.....
Illinois.		
Cairo	T.	.....
Peoria	.....	0.5
Indiana.		
Bloomington	4	.....
Fort Wayne	1	.....
Indianapolis	2	.....
Terre Haute	T.	.....
Iowa.		
Charles City	2	.....
Davenport	.....	‖
Des Moines	.....	17.5
Dubuque	1	20.5
Forest City	5	.....
New Hampton	5	.....
Sioux City	T.	32.0
Kansas.		
Iola	T.	0.5
Kentucky.		
Bowling Green	10	.....
Lexington	9	.....
Louisville	3	.....
Maysville	10	.....
Mount Sterling	8	.....
Maine.		
Bangor	8	25.0
Eastport	9	.....
Gardiner	17	24.0
Greenville	38	28.0
Lewiston	6	23.0
Portland	12	.....
Van Buren	27	.....
Maryland.		
Frederick	10	.....
Oakland	21	.....
Massachusetts.		
Boston	8	.....
Fitchburg	10	.....
Mansfield	7	.....
Nantucket	3	.....
Turners Falls	14	.....
Michigan.		
Alpena	5	18.0
Calumet	31	.....
Detroit	2	†

Stations.	Snow.	Ice in rivers, harbors, etc.
Michigan—Contd.	*Inches*	*Inches*
Escanaba	14	30.0
Grand Haven	1	.....
Grand Rapids	T.	.....
Humboldt	27	.....
Iron River	23	.....
Lansing	T.	.....
Ludington	4	.....
Marquette	23	23.0
Port Huron	3	18.5
Saginaw	1	16.5
Sault Ste. Marie	18	26.0
Minnesota.		
Duluth	12	38.0
Fort Ripley	22	.....
International Falls	22	.....
Minneapolis	17	.....
Moorhead	11	42.5
St. Paul	18	31.0
Thief River Falls	27	.....
Missouri.		
Hannibal	T.	*†
Kansas City	.....	†
St. Joseph	.....	†
St. Louis	.....	†
Montana.		
Billings	3	.....
Findon	50	.....
Glacier Park	69	.....
Haugan	45	.....
Havre	5	.....
Helena	9	.....
Kalispell	11	.....
Miles City	4	.....
Red Lodge	26	.....
Nebraska.		
North Platte	T.	.....
Omaha	.....	‖
Nevada.		
Austin	1	.....
Elko	2	.....
New Hampshire.		
Bethlehem	15	.....
Concord	10	20.0
Hanover	10	.....
Keene	9	.....
New Jersey.		
Lakewood	4	.....
Newton	7	.....
Phillipsburg	10	.....
Plainfield	8	.....
Trenton	4	†
New Mexico.		
Corona	T.	.....
Las Vegas	T.	.....
Taos	T.	.....
New York.		
Albany	11	8.0
Binghamton	7	.....
Buffalo	11	16.0
Canton	10	.....
Cutchogue	10	.....
Lowville	24	.....
New York	6	.....
Ogdensburg	15	.....
Oswego	16	7.0
Plattsburg	9	.....
Rochester	12	*
Syracuse	8	.....
North Dakota.		
Bismarck	12	35.0
Devils Lake	7	.....
Williston	1	‖

Stations.	Snow.	Ice in rivers, harbors, etc.
Ohio.	*Inches*	*Inches*
Cambridge	8	.....
Cincinnati	2	.....
Cleveland	5	6.0
Columbus	2	.....
Dayton	3	.....
Gallipolis	12	.....
Sandusky	6	7.0
Toledo	2	7.0
Waverly	9	.....
Oregon.		
Baker	1	.....
Detroit	19	.....
Gov't Camp	98	.....
Siskiyou	19	.....
Sparta	30	.....
Pennsylvania.		
Erie	6	12.0
Harrisburg	8	†
Hyndman	19	.....
Mifflintown	13	.....
Philadelphia	2	.....
Pittsburgh	12	.....
Reading	8	.....
Scranton	6	.....
Williamsport	15	.....
Rhode Island.		
Block Island	6	.....
Kingston	10	.....
Narragansett Pier	11	.....
Providence	9	.....
South Dakota.		
Pierre	T.	30.0
Rapid City	T.	.....
Yankton	T.	21.0
Tennessee.		
Chattanooga	T.	.....
Memphis	T.	.....
Nashville	4	.....
Utah.		
Heber	20	.....
Salt Lake City	4	.....
Thistle	8	.....
Vermont.		
Brattleboro	14	20.0
Burlington	14	17.5
Northfield	22	.....
St. Johnsbury	20	.....
Virginia.		
Woodstock	8	.....
Washington.		
Laurier	22	.....
Port Angeles	T.	.....
Spokane	2	.....
Stampede	55	.....
Walla Walla	T.	.....
West Virginia.		
Elkins	5	.....
Parkersburg	8	.....
Wisconsin.		
Grand Rapids	19	.....
Green Bay	14	15.5
Madison	2	.....
Medford	20	.....
Rhinelander	26	.....
Wausau	16	22.0
Wyoming.		
Dubois	12	.....
Fox Park	45	.....
Lander	T.	.....
Sheridan	T.	.....
Yellowstone Park	22	.....

*Shore ice. †Floating ice. ‡Ice gorged. ‖Measurement impracticable. T. indicates trace.

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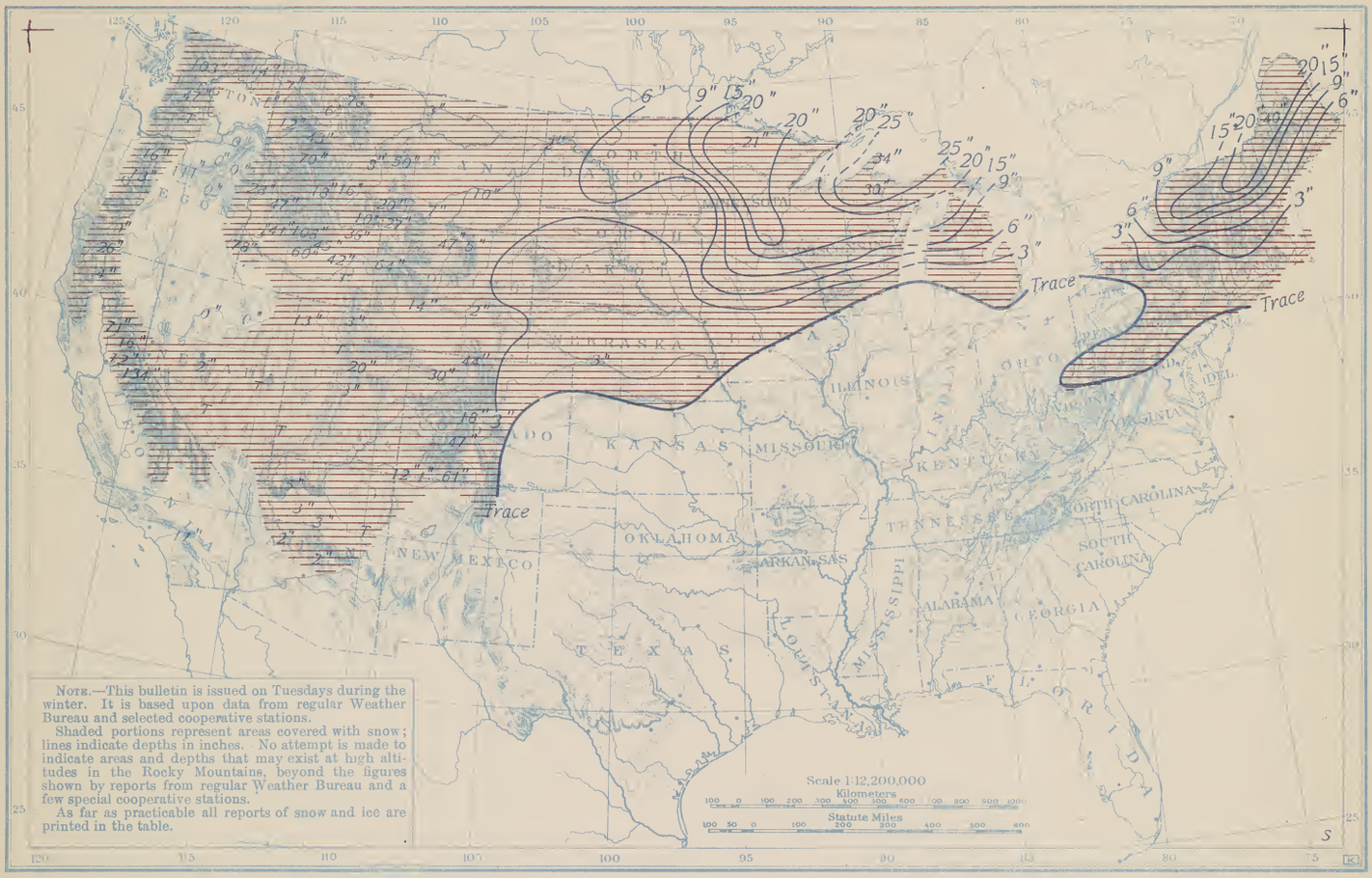
No. 15. Winter 1916-17.

U. S. DEPARTMENT OF AGRICULTURE,
WEATHER BUREAU.
CHARLES F. MARVIN, CHIEF.

MAR 15 1917

SNOW AND ICE BULLETIN.



NOTE.—This bulletin is issued on Tuesdays during the winter. It is based upon data from regular Weather Bureau and selected cooperative stations.

Shaded portions represent areas covered with snow; lines indicate depths in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond the figures shown by reports from regular Weather Bureau and a few special cooperative stations.

As far as practicable all reports of snow and ice are printed in the table.

WASHINGTON, D. C., *March 13, 1917.*

GENERAL SUMMARY OF THE WEATHER DURING THE PAST WEEK.

A low pressure area over the western Plains region at the beginning of the week moved eastward, and by Wednesday morning it had developed into considerable proportions, and snow or rain was falling over large areas in the Mississippi Valley and upper Lake region. As the storm moved eastward during the following two days precipitation was general, though mostly light, over nearly all districts to eastward of the Mississippi.

During this period cool and generally fair weather prevailed over the more western districts, except that by Thursday precipitation had set in over the far Northwest, and during the following two days rain or snow, mostly light, overspread the greater part of the Plateau and Mountain districts. The low pressure area accompanying the precipitation referred to above had moved to the middle Plains States by Saturday morning, but without material precipitation. During the following two days, however, the disturbance moved to the Lake region and New England, accompanied by rain or snow over the surrounding territory, the snowfall being considerable at points in Upper Michigan. At the same time light snows were reported from points in the Northwest and locally in the Mountain and Plateau districts.

At this writing a low pressure area has advanced to eastern Oklahoma, and rain or snow prevails over large areas to the northward and eastward, the rainfall being heavy over portions of the drainage basins of the Ohio and Tennessee Rivers.

DEPTH OF SNOW.

The large body of snow over the Ohio Valley at the close of the preceding week disappeared rapidly, and at the present time only traces remain. Likewise to the northeastward the snow depth decreased from 5 to 10 inches or more, except in central and northern New England, where there was a slight increase. Moderate increases in the snow depth were reported from the extreme upper Lake region, and a heavy covering now prevails westward to and including most of North Dakota.

In the mountain regions of the West increases in the snow depths are noted from most of the higher ranges, except in portions of western Montana, northern Idaho, Washington, and locally in Oregon.

Rains in the past 24 hours over the southwestern portions of the winter grain region will doubtless greatly benefit the crop conditions in that section, where dry weather has threatened serious injury.

ICE IN RIVERS AND HARBORS.

Practically no change occurred in the amount of ice reported over the rivers and lakes of the more northern districts, except in New England, where slight increases were noted over the interior and northern portions. In the lower Lakes the ice has moved out of some of the harbors, but in the other Lakes the harbors remain as reported last week.

The breaking up of the ice and rapid melting of the snow cover over the head waters of the Ohio River are causing high waters, with prospects of further rises if rains now prevailing in that region should become heavy.

The following report on the ice conditions over the Great Lakes is furnished by the official in charge at Detroit, Mich.:

In Lake Superior heavy ice fields extend 40 miles east from Duluth, with open water beyond on north shore, but on south shore ice extends to Keweenaw Point, where open water is reported. Extensive fields are reported from Marquette to Whitefish Bay. St. Marys River remains closed, but in Green Bay the ice has some slush on top. Fields over southern Michigan are moving off shore and breaking up, but no material change has occurred over northern portion or at the Straits. Over Lake Huron the fields continue as reported last week, except for more open water in the extreme south end. More open water is reported over western Lake Erie, with moving fields over the east portion, and considerable field ice is reported over the east portion of Lake Ontario. More ice is reported in Lakes Superior, Michigan, and Huron than for last season, and about the same in Erie and Ontario.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., MARCH 12, 1917.

Stations.	Snow.	Ice in rivers, harbors, etc.
Arizona.	*Inches*	*Inches*
Carrs Ranch	2	.....
Flagstaff	3	.....
Grand Canyon	5	.....
Prescott	2	.....
Williams	3	.....
California.		
Inskip	71	.....
McCloud	4	.....
Portola	16	.....
Sierraville	12	.....
Squirrel Inn	17	.....
Summit	184	.....
Colorado.		
Crested Butte	47	.....
Cumbres	61	.....
Denver	2	.....
Durango	1	.....
Leadville	18	.....
Rico	12	.....
Steamboat Springs	80	.....
Connecticut.		
Hartford	T.	.....
New Haven	T.	.....
West Cornwall	5	.....
Idaho.		
Boise	3	.....
Hailey	42	.....
Ketchum	45	.....
Oxford Ranger Sta.	70	.....
Pocatello	T.	.....
Silver City	78	.....
Soldier Creek	60	.....
Vienna	108	.....
Iowa.		
Charles City	4	.....
Davenport	.....	‡
Des Moines	T.	‡
Dubuque	T.	‡
Estherville	2	.....
Pocahontas	1	.....
Sioux City	T.	§
Kansas.		
Concordia	T.	.....
Maine.		
Bangor	6	23.0
Eastport	2	.....
Gardiner	14	23.0
Greenville	40	29.0
Lewiston	9	24.0
Portland	6	.....
Maryland.		
Frederick	1	.....
Oakland	T.	.....
Massachusetts.		
Adams	4	.....
Amherst	2	.....
Boston	2	.....
Fitchburg	4	.....
Holyoke	6	.....
Mansfield	6	.....
Turners Falls	12	.....
Michigan.		
Alpena	5	18.0
Big Rapids	3	.....
Calumet	34	.....
Detroit	1	16.0
Escanaba	16	30.0
Grand Rapids	T.	.....
Harrisville	8	.....
Michigan—Contd.		
Houghton	15	22.0
Humboldt	30	.....
Iron Mountain	27	.....
Ironwood	25	.....
Ludington	T.	.....
Marquette	27	23.0
Menominee	17	.....
Port Huron	T.	12.0
Saginaw	T.	15.0
St. Ignace	13	.....
Sault Ste. Marie	22	26.5
Minnesota.		
Duluth	15	38.0
Fort Ripley	29	.....
Grand Meadow	9	.....
International Falls	21	.....
Leech Lake Dam	19	.....
Mankato	8	.....
Minneapolis	20	.....
Moorhead	4	42.5
Roseau	20	.....
St. Paul	21	31.0
Thief River Falls	26	.....
Winton	14	.....
Montana.		
Billings	7	.....
Bowen	18	.....
Bozeman	20	.....
Butte	16	.....
Findon	50	.....
Glacier Park	76	.....
Haugan	43	.....
Havre	3	.....
Helena	8	.....
Kalispell	6	.....
Snow Belt	10	.....
Virginia City	10	.....
Nebraska.		
Lincoln	2	.....
North Platte	3	.....
Omaha	1	†
Valentine	2	.....
Nevada.		
Austin	2	.....
Reno	T.	.....
Tonopah	T.	.....
New Hampshire.		
Bethlehem	20	.....
Concord	9	23.0
Hanover	13	.....
W. Stewartstown	25	.....
New Jersey.		
Newton	T.	.....
Phillipsburg	1	.....
New York.		
Albany	2	§
Angelica	T.	.....
Binghamton	T.	.....
Buffalo	1	16.0
Canton	12	.....
Cazenovia	13	.....
De Ruyter	4	.....
Ithaca	T.	.....
Ogdensburg	15	.....
Oswego	10	6.0
Plattsburg	8	.....
Rochester	T.	.....
Saratoga	5	.....
Syracuse	1	.....
Watertown	2	.....
North Dakota.		
Bismarck	15	35.0
Devils Lake	6	.....
Williston	2	29.5
Ohio.		
Sandusky	.....	†
Toledo	.....	†
Oregon.		
Baker	T.	.....
Detroit	13	.....
Gov't Camp	111	.....
Siskiyou	26	.....
Sparta	28	.....
Welches	16	.....
Pennsylvania.		
Drifton	4	.....
Harrisburg	T.	‡
Hyndman	T.	.....
Mifflintown	T.	.....
Reading	T.	.....
Rhode Island.		
Block Island	T.	.....
Kingston	5	.....
Narragansett Pier	1	.....
Providence	2	.....
South Dakota.		
Huron	2	30.0
Pierre	T.	§
Rapid City	1	.....
Yankton	1	20.0
Utah.		
Heber	20	.....
Kelton	3	.....
Logan	8	.....
Modena	T.	.....
Salt Lake City	T.	.....
Thistle	3	.....
Vermont.		
Bellows Falls	7	.....
Brattleboro	8	18.0
Burlington	14	18.0
Northfield	23	.....
St. Johnsbury	26	.....
White River J'n.	12	.....
Washington.		
Cascade Tunnel	103	.....
Laurier	14	.....
North Yakima	T.	.....
Spokane	1	.....
Stampede	47	.....
West Virginia.		
Parkersburg	T.	.....
Wisconsin.		
Fond du Lac	4	.....
Grand Rapids	17	.....
Green Bay	6	14.0
La Crosse	3	20.0
Madison	T.	.....
Medford	16	.....
Park Falls	17	.....
Rhinelander	28	.....
Wausau	16	21.0
Wyoming.		
Alta	64	.....
Cheyenne	2	.....
Dome Lake	47	.....
Fox Park	44	.....
Sheridan	5	.....
South Pass City	14	.....
Wyncote	4	.....
Yellowstone Park	27	.....

*Shore ice. †Floating ice. ‡Ice gorged. §Measurement impracticable. T. indicates trace.

No. 16. Winter 1916-17.

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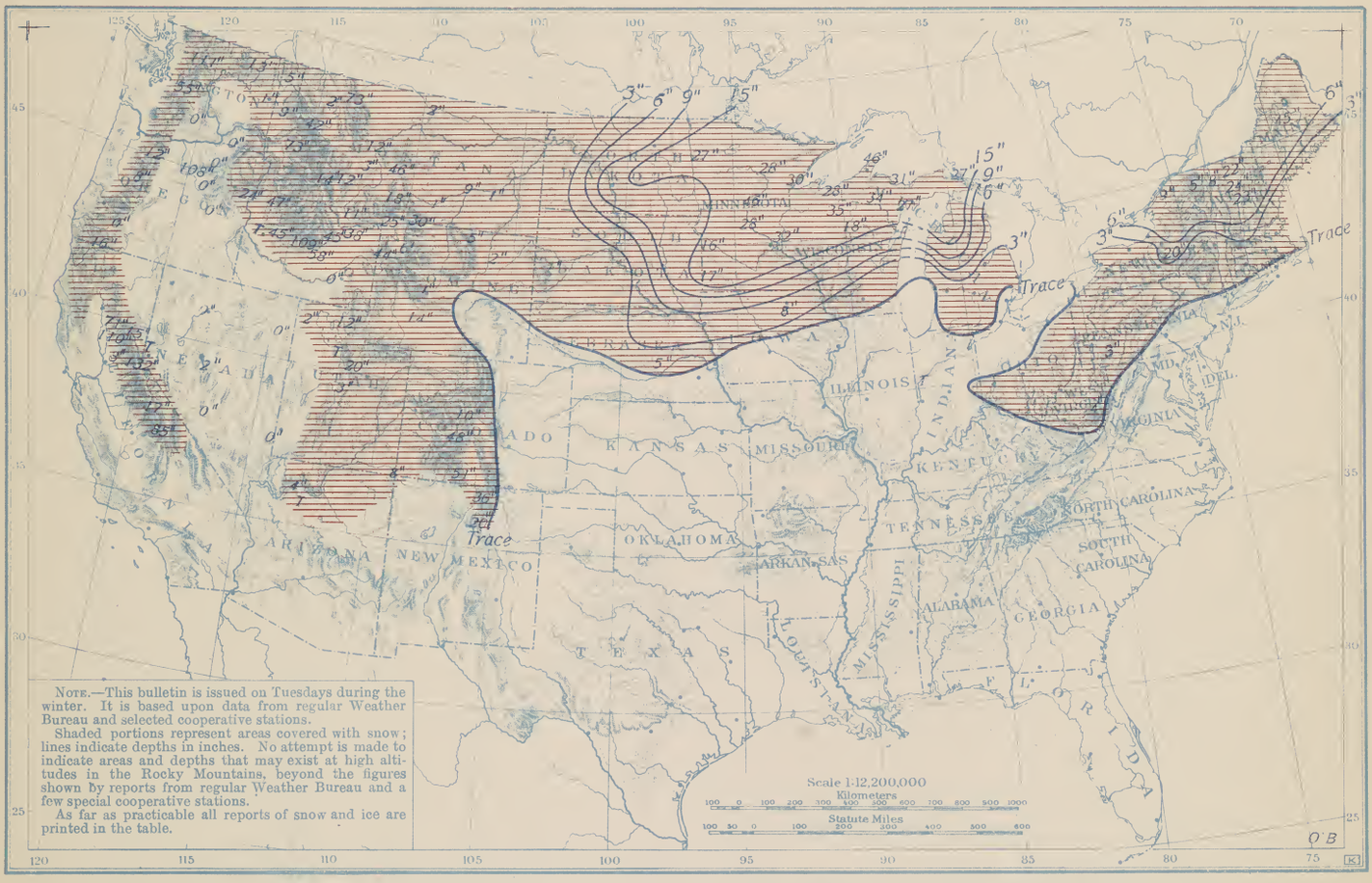
U. S. DEPARTMENT OF AGRICULTURE,
WEATHER BUREAU.
CHARLES F. MARVIN, CHIEF.

MAR 21 1917
U. S. Department of Agriculture

SNOW AND ICE BULLETIN.



WASHINGTON, D. C., *March 20, 1917.*

GENERAL SUMMARY OF THE WEATHER DURING THE PAST WEEK.

The storm over eastern Oklahoma at the beginning of the week moved to the northeastward, and precipitation, mostly rain, was general during the following two days from the central valleys eastward, except in portions of the Southeastern States. At the same time rain prevailed over the Pacific Coast States, and light snows were reported from points in the Plateau region. The western disturbance had moved to Colorado by Thursday morning, and light snows continued to the westward. During the following 24 hours the storm moved to southeastern Nebraska with much increased energy, and precipitation was general over considerable adjacent areas. To the northward of the center snow occurred in considerable amounts, especially in portions of Nebraska and South Dakota, while to the southward some heavy rains were reported. This storm likewise moved northeastward and by Sunday morning had reached the Canadian Maritime Provinces, accompanied by rain or snow over practically all districts from the central valleys eastward. Heavy snows occurred during this period in the upper Lake region, and further rains in portions of the Ohio and Tennessee Valleys added somewhat to the flood conditions already existing in those rivers.

Following the above mentioned storm fair weather prevailed over all western districts, and by Monday morning cool and clear weather was general over nearly all portions of the country.

At this writing low pressure and cloudy weather with local rains prevail in the Southwest, and light local showers are reported in portions of the Gulf States and far Northwest; elsewhere fair weather continues.

DEPTH OF SNOW.

Large increases in the depth of snow cover occurred during the week in the upper Lake region and thence westward over Wisconsin and Minnesota, and the accumulated depths in portions of those districts are now greater than at any other time during the season. In portions of the Ohio Valley and the adjacent Appalachian Mountain region, bare last week, there is now a slight covering, and at a few points in the Western mountain districts there has been a slight increase during the week. Elsewhere the depth of the snow cover is less than reported a week ago, the decreases being considerable in portions of New England and the mountain regions of Colorado, Wyoming, Montana, and Oregon. The lower levels of the Plateau regions are now largely free of snow, and only a slight cover prevails over the eastern foothills of the Rocky Mountains and the adjacent Plains region from Nebraska northward.

The absence of any marked high temperatures over the far western districts prevented rapid melting of the snow cover in the high ranges, and but little run-off occurred.

In the winter grain districts to westward of the Mississippi, rains added materially to the supply of moisture in the soil and doubtless further improved the crop outlook in the districts where severe drought had prevailed.

ICE IN RIVERS AND HARBORS.

Due to comparatively cool weather over most northern districts, no decided changes in the conditions occurred over those reported a week ago, although the ice is beginning to break up and move out in most of the streams still covered. The harbors of the lower Lakes are now largely free of ice, but in the upper Lakes they are still heavily covered.

The following special report on the ice conditions over the Great Lakes is furnished by the official in charge at Detroit, Mich.:

No marked change occurred in conditions over Lake Superior, the St. Marys River, northern Lake Michigan, and at the Straits. Ice fields disappeared over southern Lake Michigan and the fields are breaking up over southern Lake Huron. The fields in Lake Erie are now confined to the eastern portion, Ashtabula to Buffalo, while Lake Ontario fields are in the extreme east portion. Heavier ice than usual prevails over Lake Superior, in northern Lake Michigan, and in Lake Huron, but there is less in Lakes Erie and Ontario.

P. C. DAY, *Climatologist and Chief of Division.*

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., MARCH 19, 1917.

Stations.	Snow.	Ice in rivers, harbors, etc.
Arizona.	*Inches*	*Inches*
Flagstaff	T.	
Grand Canyon	4	
Williams	1	
California.		
Huntington Lake	85	
Inskip	71	
Portola	15	
Summit	132	
Table Rock	110	
Yosemite	17	
Colorado.		
Crested Butte	48	
Cumbres	51	
Leadville	10	
Rico	8	
Connecticut.		
Hartford	T.	
West Cornwall	4	
Idaho.		
Boise	T.	
Hailey	42	
Idaho City	45	
Ketchum	45	
McCall	47	
Oxford Ranger Sta.	78	
Port Hill	5	
Soldier Creek	58	
Spencer	38	
Vienna	109	
Wallace	9	
Indiana.		
La Fayette	T.	
Richmond	T.	
Winona Lake	T.	
Iowa.		
Carroll	3	
Charles City	3	
Dubuque	T.	
Estherville	6	
Mason City	8	
New Hampton	6	
Pocahontas	6	
Sioux City	2	≷
Maine.		
Bangor	4	20.0
Eastport	1	
Gardiner	11	20.0
Greenville	45	29.0
Portland	1	
Maryland.		
Oakland	T.	
Massachusetts.		
Fitchburg	1	
Mansfield	T.	
Turners Falls	4	
Michigan.		
Alpena	4	20.0
Battle Creek	2	
Big Rapids	3	
Cadillac	12	
Calumet	46	
Escanaba	27	30.0
Grand Rapids	T.	
Harrisville	6	
Houghton	32	21.5
Iron Mountain	34	
Ludington	1	
Manistee	15	
Marquette	31	28.5
Rock	30	
Michigan—Contd.	*Inches*	*Inches*
Port Huron	T.	≷
Saginaw	T.	14.5
Sault Ste. Marie	27	26.5
Minnesota.		
Collegeville	28	
Duluth	30	38.0
Fort Ripley	46	
Grand Meadow	18	
Hinckley	27	
Leech Lake Dam	28	
Mankato	20	
Minneapolis	29	
Moorhead	4	≷
Pipestone	17	
St. Paul	32	≷
Thief River Falls	27	
Wheaton	6	
Winton	18	
Montana.		
Adel	12	
Billings	1	
Butte	12	
Findon	46	
Glacier Park	73	
Haugan	42	
Havre	2	
Helena	3	
Kalispell	2	
Miles City	1	
Red Lodge	30	
Virginia City	11	
Nebraska.		
Alliance	2	
Omaha		†
Ravenna	5	
Tekamah	2	
Valentine	2	
Nevada.		
Austin	2	
Reno	T.	
New Hampshire.		
Bethlehem	23	
Concord	4	23.0
Hanover	14	
Keene	4	
Lancaster	30	
W. Stewartstown	29	
New York.		
Albany	T.	†
Angelica	2	
Binghamton	T.	
Buffalo	T.	14.0
Canton	9	
Cazenovia	20	
Ithaca	T.	
Oswego	7	
Plattsburg	5	
Rochester	T.	
Syracuse	T.	
Warwick	T.	
North Dakota.		
Bismarck	14	35.0
Devils Lake	5	
Williston	T.	≷
Ohio.		
Ashland	T.	
Cambridge	T.	
Tiffin	T.	
Waverly	T.	
Youngstown	T.	
Oregon.	*Inches*	*Inches*
Baker	T.	
Detroit	8	
Gov't Camp	108	
Siskiyou	16	
Sparta	24	
Welches	12	
Pennsylvania.		
Drifton	T.	
Erie		†
Greensboro	T.	
Greenville	2	
Hyndman	1	
Indiana	2	
Pittsburgh	T.	
Reading	T.	
Somerset	3	
Warren	1	
Rhode Island.		
Block Island	T.	
Kingston	T.	
Narragansett Pier	T.	
South Dakota.		
Huron	7	32.0
Pierre	T.	≷
Rapid City	1	
Yankton	6	≷
Utah.		
Heber	20	
Kelton	2	
Logan	12	
Salt Lake City	T.	
Thistle	3	
Vermont.		
Bellows Falls	2	
Brattleboro	6	14.0
Burlington	8	17.0
Northfield	24	
St. Johnsbury	22	
Wells River	14	
White River J'n.	8	
Washington.		
Cascade Tunnel	111	
Laurier	13	
Spokane	1	
Stampede	55	
West Virginia.		
Charleston	T.	
Fairmont	1	
Holcomb	4	
Rowlesburg	T.	
Wisconsin.		
Ashland	28	
Delavan	T.	
Fond du Lac	2	
Grand Rapids	24	
Green Bay	3	9.5
La Crosse	4	≷
Madison	1	
Medford	28	
Milwaukee	T.	
Park Falls	35	
Wausau	18	20.5
Wyoming.		
Alta	44	
Buffalo	2	
Lander	1	
Sheridan	5	
South Pass City	14	
Valley	6	
Yellowstone Park	25	

* Shore ice. † Floating ice. ‡ Ice gorged. ≷ Measurement impracticable. T. indicates trace.

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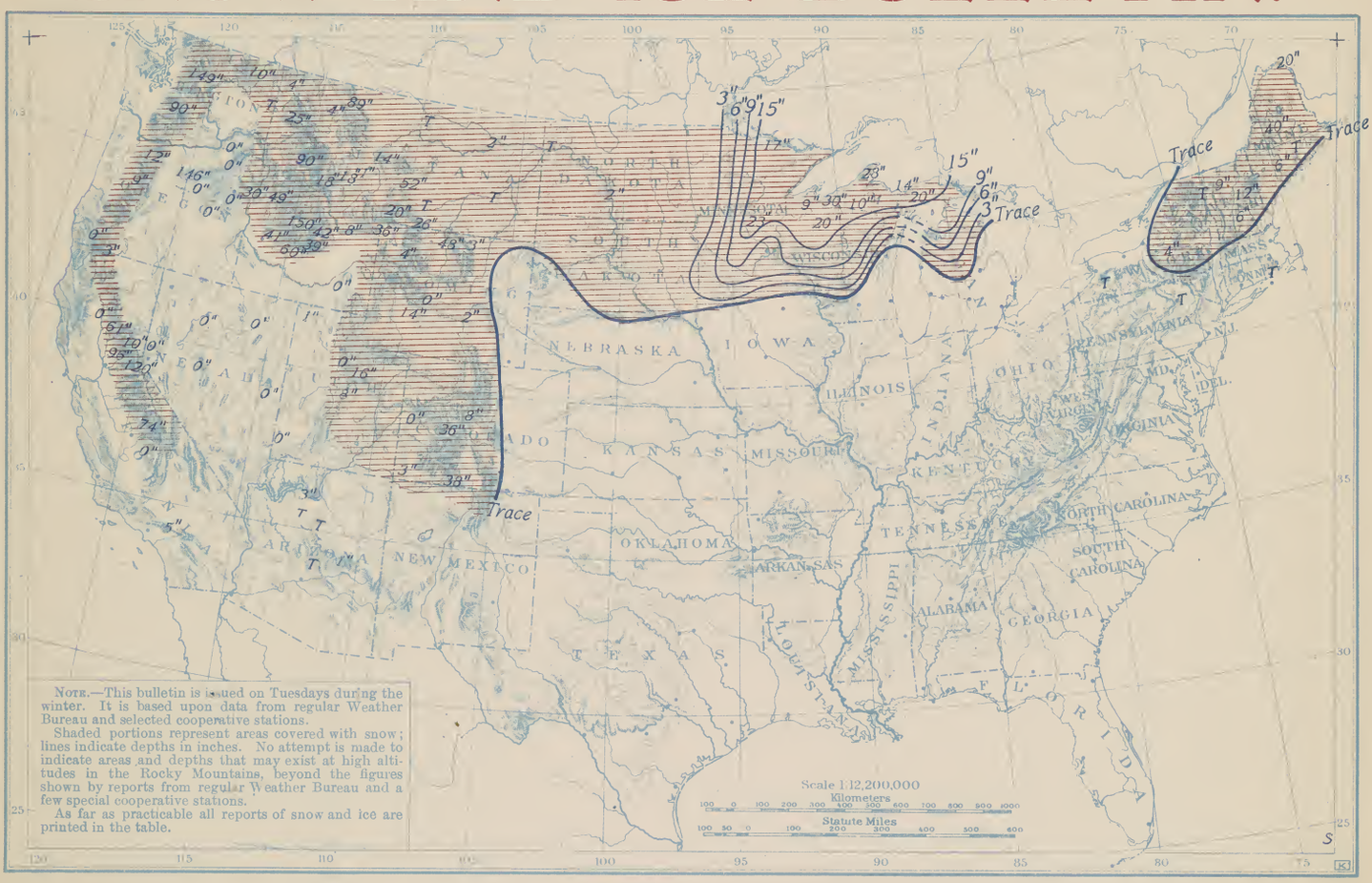
No. 17. Winter 1916-17.

U. S. DEPARTMENT OF AGRICULTURE,
WEATHER BUREAU.

CHARLES F. MARVIN, CHIEF.

MAR 28 1917

SNOW AND ICE BULLETIN.



NOTE.—This bulletin is issued on Tuesdays during the winter. It is based upon data from regular Weather Bureau and selected cooperative stations.

Shaded portions represent areas covered with snow; lines indicate depths in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond the figures shown by reports from regular Weather Bureau and a few special cooperative stations.

As far as practicable all reports of snow and ice are printed in the table.

WASHINGTON, D. C., *March 27, 1917.*

GENERAL SUMMARY OF THE WEATHER DURING THE PAST WEEK.

The low pressure over the Southwest at the beginning of the week advanced to the Atlantic coast during Tuesday and Wednesday, accompanied by general, and in some cases heavy, rains over most districts to southward of the Lake region, and from the Mississippi Valley eastward. At the same time local rains or snows prevailed in portions of the far West.

The unsettled conditions in the western districts had advanced to the Plains region by Thursday without material precipitation, but by Friday morning a well developed storm-center was located over southern Wisconsin, and thunder-storms, with local heavy rains, prevailed over considerable portions of the Mississippi Valley and Lake region, and showers were reported from the Southern States. During the following 24 hours the storm-center moved to the lower St. Lawrence Valley, and the precipitation area extended to all districts to eastward of the Mississippi, except in portions of Florida and along the south Atlantic and east Gulf coasts. Fair weather prevailed during the middle portion of the week in most western districts, and with a few exceptions it was the rule in all portions of the country during the latter part.

During Monday a disturbance moved from Missouri to the Ohio Valley, and quite general rains prevailed in the central valleys and portions of the South at the close of the week.

At this writing the storm-center is over western Ontario, and general rains and thunder-storms have prevailed over much of the eastern part of the country. The rainfall has been heavy in portions of the Tennessee Valley, East Gulf and South Atlantic States, and snow is falling at points in the Lake region.

DEPTH OF SNOW.

Practically no snow occurred during the week in the districts to the eastward of the Rocky Mountains, and a large portion of the heavy covering at the close of the preceding week from the upper Lake region westward to the Dakotas has disappeared. The melting has been rapid also from central New York northeastward into New England, where there is now but little snow, except at the higher elevations and in the extreme northern portions.

In the mountain regions of the West there were considerable increases in some of the higher mountains, particularly in western Montana and portions of Idaho, Washington, and Oregon, but in the central and southern sections but little snow fell and decided reductions in the depth of the snow cover are reported from points in the mountains of California and Colorado. In the absence of any decided warmth or rainfall it is probable the decrease in depth has not resulted in any appreciable run-off. Late reports from the mountain regions indicate there is a large supply of well-packed snow over nearly all the higher ranges, except in New Mexico and portions of Nevada, and the outlook for an abundant supply of water continues excellent.

More or less rain occurred during the week over the winter grain region from Iowa southward over the eastern portions of Kansas and Oklahoma, and thence eastward, but in the western portions of the two last-named States there appears to have been but little precipitation.

ICE IN RIVERS AND HARBORS.

With the warming up, due to the advance of spring, there was a general breaking up of the ice in practically all the main streams of the northern districts, except in New England, where heavy ice still remains. The Missouri is generally open to the southward of Bismarck, the Mississippi is largely free of ice, and the Hudson is open to navigation.

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., MARCH 26, 1917.

Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors, etc.	Stations.	Snow.	Ice in rivers, harbors, etc.
Arizona.	*Inches*	*Inches*	*Michigan*—Contd.	*Inches*	*Inches*	*North Dakota*—Cd.	*Inches*	*Inches*
Carrs Ranch	T.	.....	St. Ignace	12	.....	Williston	T.	≷
Flagstaff	T.	.....	Sault Ste. Marie	13	26.5	*Oregon.*		
Grand Canyon	3	.....	*Minnesota.*			Detroit	9	.....
Pinetop	1	.....	Collegeville	14	.....	Gov't Camp	146	.....
Williams	T.	.....	Duluth	4	38.0	Siskiyou	3	.....
California.			Fort Ripley	23	.....	Sparta	30	.....
Huntington Lake	74	.....	International Falls	17	.....	Welches	12	.....
Inskip	61	.....	Minneapolis	4	.....	*Pennsylvania.*		
Portola	10	.....	Moorhead	T.	‡	Drifton	T.	.....
Squirrel Inn	5	.....	Pipestone	4	.....	*Rhode Island.*		
Summit	120	.....	St. Paul	4	*	Narragansett Pier	T.	.....
Table Rock	96	.....	Thief River Falls	T.	.....	*South Dakota.*		
Colorado.			Wheaton	1	.....	Huron	T.	†
Crested Butte	36	.....	*Montana.*			Pierre	T.	≷
Cumbres	38	.....	Adel	14	.....	Yankton	T.	†‡
Leadville	8	.....	Billings	T.	.....	*Utah.*		
Rico	3	.....	Bowen	18	.....	Heber	16	.....
Idaho.			Bozeman	20	.....	Kelton	1	.....
Hailey	39	.....	Butte	18	.....	Thistle	8	.....
Idaho City	41	.....	Findon	52	.....	*Vermont.*		
Ketchum	42	.....	Glacier Park	89	.....	Brattleboro	.....	≷
McCall	49	.....	Glasgow	2	.....	Burlington	T.	13.0
Oxford Ranger Sta.	90	.....	Havre	T.	.....	St. Johnsbury	9	.....
Porthill	4	.....	Helena	1	.....	Wells River	12	.....
Soldier Creek	60	.....	Kalispell	4	.....	White River J'n.	4	.....
Vienna	150	.....	Miles City	T.	.....	*Washington.*		
Wallace	25	.....	Red Lodge	26	.....	Cascade Tunnel	149	.....
Iowa.			Virginia City	8	.....	Laurier	10	.....
Dubuque	.....	*	*Nebraska.*			North Yakima	T.	.....
Estherville	T.	.....	Valentine	T.	.....	Spokane	T.	.....
Mason City	T.	.....	*New Hampshire.*			Stampede	90	.....
Maine.			Bethlehem	12	.....	*Wisconsin.*		
Bangor	T.	18.0	Concord	T.	18.0	Ashland	9	.....
Gardiner	6	16.0	Hanover	6	.....	Eau Claire	10	.....
Greenville	40	28.0	Keene	T.	.....	Grand Rapids	15	.....
Lewiston	T.	15.0	Lancaster	16	.....	Green Bay	.....	4.0
Portland	T.	.....	W. Stewartstown	24	.....	La Crosse	.....	≷
Van Buren	20	.....	*New Jersey.*			Medford	10	.....
Michigan.			Trenton	.....	†	Park Falls	20	.....
Alpena	T.	20.0	*New York.*			Wausau	6	≷
Big Rapids	T.	.....	Albany	T.	.....	*Wyoming.*		
Calumet	28	.....	Angelica	T.	.....	Casper	2	.....
Chatham	20	.....	Buffalo	.....	12.0	Cheyenne	T.	.....
Escanaba	8	29.0	Canton	T.	.....	Dome Lake	48	.....
Iron Mountain	15	.....	Cazenovia	4	.....	Sheridan	3	.....
Iron River	10	.....	Roxbury	1	.....	South Pass City	14	.....
Ironwood	30	.....	*North Dakota.*			Valley	4	.....
Manistee	8	.....	Bismarck	2	34.0	Yellowstone Park	36	.....
Marquette	14	23.0	Devils Lake	T.	.....			

* Shore ice. † Floating ice. ‡ Ice gorged. ≷ Measurement impracticable. T. indicates trace.

The conditions in the Great Lakes are shown in the following report from the official in charge at Detroit, Mich.:

Heavy ice fields continue over Lake Superior, but they are beginning to break and move out with the winds, except over the extreme west end. No change occurred in St. Marys River, and in Green Bay the ice is covered with slush water. In Lake Michigan the fields disappeared over the west and south portions, but they extend from Holland north to the Straits, where the ice is solid, but the snow cover is melting. The fields in Lake Huron are breaking and moving with the winds, the extreme southern portion being open. The western half of Lake Erie is free of ice, but in the east portion the fields are broken and moving with the winds. In Lake Ontario the fields are confined to the extreme eastern end. Heavier ice is reported in Lake Superior, and less in Lakes Michigan, Huron, Erie, and Ontario than last season.

P. C. DAY, *Climatologist and Chief of Division.*

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No. 18. Winter 1916-17.

U. S. DEPARTMENT OF AGRICULTURE,
WEATHER BUREAU.

CHARLES F. MARVIN, CHIEF.

APR 1 1917

SNOW AND ICE BULLETIN.

NOTE.—This bulletin is issued on Tuesdays during the winter. It is based upon data from regular Weather Bureau and selected cooperative stations.

Shaded portions represent areas covered with snow; lines indicate depths in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond the figures shown by reports from regular Weather Bureau and a few special cooperative stations.

As far as practicable all reports of snow and ice are printed in the table

WASHINGTON, D. C., *April 3, 1917.*

GENERAL SUMMARY OF THE WEATHER DURING THE PAST WEEK.

The storm central over western Ontario at the beginning of the week moved to the lower St. Lawrence Valley by Wednesday morning, at which time clearing weather prevailed over nearly all eastern districts, while to the westward fair weather continued, except locally in the far Northwest. During Thursday and Friday local rains and snows prevailed in portions of the western mountain districts, and light precipitation occurred from the Lake region and upper Ohio Valley eastward. In other districts fair weather continued until Saturday morning, at which time rain was falling in the vicinity of the Lake region, and clouds were forming over most districts between the Mississippi River and the Rocky Mountains. To the westward local snows were reported from a few districts. By Sunday morning generally unsettled weather, with showers, heavy in a few localities, prevailed over a narrow area from northern Texas to New England, and local rains and snows were reported from the far western districts. During the following 24 hours precipitation overspread considerable portions of the Mississippi and Ohio Valleys, the Lake region, and New England, with heavy rains and thunderstorms in the lower Ohio and lower Mississippi Valleys, and rains or snows continued in the far Northwest.

At this writing the weather is clearing over most districts to eastward of the Mississippi, but to the westward cloudy weather is general, with local rains and snows in portions of the mountain districts, and indications of the development of a storm over the middle Plains region.

DEPTH OF SNOW.

At a few points in the western mountain districts the snow cover increased in depth during the week, due to local falls mostly at the higher elevations. In the districts to the eastward the snow depths were gradually reduced by the moderately increasing warmth, and at the close of the week only small areas in the vicinity of the upper Lake region and in the woods of northern New England remained covered.

The large amount of snow that had accumulated during the winter in the northern portions of New York and New England, and in the upper Lake region and westward to the Dakotas, melted gradually, and the resulting water appears to have passed into the streams without causing material flood conditions.

In the western mountain districts the season of snowfall appears to have closed with a large supply of well-packed snow in the higher ranges, and prospects for an abundant supply of water in the more important irrigation districts seem assured. The lack of snow cover over large portions of the winter grain regions during the latter part of the winter, and prolonged drought conditions in the Southwest have caused much damage to the wheat crop, but in the more northern districts where this crop is grown, and in the eastern sections, the outlook appears more promising.

ICE IN RIVERS AND HARBORS.

Moderate temperatures prevailed during most of the week over the northern districts and such ice as remained on the rivers broke up gradually and passed out, as a rule, without serious damage by gorges or otherwise. In portions of New England, however, the ice still remains intact. In the Great Lakes the ice is breaking up and navigation is now possible over many portions.

DEPTH OF SNOW AND THICKNESS OF ICE AT 8 P. M., APRIL 2, 1917.

Stations.	Snow.	Ice in rivers, harbors, etc.
Arizona.	*Inches*	*Inches*
Carrs Ranch	T.	.....
Grand Canyon	2	.....
Pinetop	T.	.....
Williams	T.	.....
California.		
Huntington Lake	59	.....
Inskip	55	.....
Portola	6	.....
Summit	120	.....
Table Rock	90	.....
Colorado.		
Crested Butte	30	.....
Denver	1	.....
Leadville	2	.....
Rico	2	.....
Steamboat Springs	26	.....
Idaho.		
Boise	T.	.....
Hailey	36	.....
Idaho City	35	.....
Ketchum	44	.....
McCall	50	.....
Oxford Ranger Sta.	90	.....
Pocatello	T.	.....
Porthill	3	.....
Soldier Creek	55	.....
Spencer	31	.....
Vienna	130	.....
Wallace	22	.....
Maine.		
Bangor	.....	12.0
Gardiner	T.	‡
Van Buren	7	.....
Michigan.		
Alpena	T.	.....
Cadillac	1	.....
Chatham	12	.....
Escanaba	T.	.....
Houghton	4	18.0

Stations.	Snow.	Ice in rivers, harbors, etc.
Michigan—Contd.	*Inches*	*Inches*
Humboldt	24	.....
Mancelona	8	.....
Newberry	12	.....
Sault Ste. Marie	6	24.0
Minnesota.		
Collegeville	4	.....
Duluth	T.	36.0
Fort Ripley	T.	.....
Grand Meadow	T.	.....
Hinckley	T.	.....
Leech Lake Dam	5	.....
Minneapolis	T.	.....
Pipestone	T.	.....
Roseau	5	.....
St. Paul	T.	.....
Wheaton	T.	.....
Montana.		
Billings	T.	.....
Findon	47	.....
Glacier Park	89	.....
Glasgow	T.	.....
Haugan	48	.....
Helena	T.	.....
Miles City	T.	.....
Virginia City	T.	.....
Nevada.		
Austin	1	.....
McGill	T.	.....
New Hampshire.		
Bethlehem	2	.....
Lancaster	6	.....
W. Stewartstown	14	.....
New Mexico.		
Rociada	6	.....
Santa Fe	T.	.....
New York.		
Buffalo	.....	†
North Dakota.		
Bismarck	.....	≷
Williston	T.	≷

Stations.	Snow.	Ice in rivers, harbors, etc.
Oregon.	*Inches*	*Inches*
Baker	T.	.....
Detroit	10	.....
Gov't Camp	144	.....
Siskiyou	5	.....
Sparta	24	.....
Welches	12	.....
South Dakota.		
Rapid City	T.	.....
Yankton	.....	†
Utah.		
Heber	8	.....
Kelton	3	.....
Logan	4	.....
Salt Lake City	1	.....
Thistle	4	.....
Vermont.		
Burlington	.....	†
Northfield	T.	.....
St. Johnsbury	T.	.....
Washington.		
Cascade Tunnel	185	.....
Glacier	8	.....
Laurier	9	.....
Spokane	T.	.....
Stampede	92	.....
Wisconsin.		
Brodhead	T.	.....
Delavan	T.	.....
Grand Rapids	3	.....
Park Falls	8	.....
Rhinelander	T.	.....
Wausau	T.	≷
Wyoming.		
Cheyenne	1	.....
Dome Lake	43	.....
Lander	5	.....
South Pass City	12	.....
Yellowstone Park	24	.....

*Shore ice. †Floating ice. ‡Ice gorged. ≷Measurement impracticable. T. indicates trace.

The following report from the official in charge at Detroit shows the conditions over the several lakes:

Stationary fields of ice cover the extreme western and eastern portions of Lake Superior, with moving fields over the central portions. The ice is decreasing in St. Marys River and over Green Bay, and the Michigan fields are confined to the eastern shore from Grand Haven north to the Straits, where the ice continues 20 inches thick. In Lake Huron the fields all moved to the eastern shore, while in Lake Erie the fields are over the extreme east portion, as is the case in Lake Ontario. Navigation from Detroit to Cleveland opened on the 2d.

P. C. DAY, *Climatologist and Chief of Division.*

NOTE.—This will be the last bulletin of this series for the season of 1916-17.

Bulletins showing the condition of the ice in the Great Lakes will probably be issued from the Weather Bureau office in Detroit, Mich., for several weeks. Copies may be secured by addressing the office at that place.